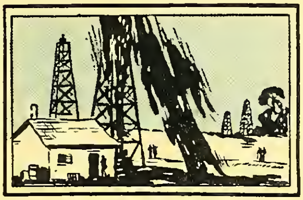
Louisiana Conservation REVIEW



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Bureau of Education,
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ECONOMIC SURVEY OF SHRIMP INDUSTRY BEING MADE

THE Department of Conservation has had in conduct, in cooperation with the Federal Bureau of Fisheries, a searching investigation of the commercially important sea shrimp. This fishery was, in 1929, fifth in value and ninth in volume of all of the commercial fisheries of the United States. The biological and hydrographic investigations which have thus far been accomplished have shed much light on the hitherto completely obscure life history of these valuable sea animals. Fundamentally important blank spaces in the knowledge of the habits, breeding and movements of commercial shrimp have, as a result of systematic scientific studies, now become filled in with established facts. The shrimp fishery, like all other commercial fisheries, is not, however, only a biological thing. Like all other exploitations of a natural resource, the shrimp fishery is made up of a balance between two complex sets of conditions. First, and undoubtedly the most important basically, the biological and physical complex which affects and controls the abundance and success of the shrimp stock. Second, and also important, the economic complex on the land which, a resultant of general business conditions, of seasonal demand and of other more obscure factors, affects the marketing of the commercial product. There has just been begun for the first time an economic survey of the shrimp industry in Louisiana and the other Gulf States.

Mr. F. F. Johnson, of the Division of Fishery Industries of the U. S. Bureau of Fisheries, arrived in Louisiana June 12th to begin, with M. J. Lindner, Acting in Charge of the Federal group of the Shrimp Investigations, a six week intensive survey of shrimp economics. These investigations will embrace a preliminary survey of factory and processing methods, a study of the cooperative possibilities in marketing activities and a fact-finding examination of the present economic picture relating to shrimp. Especially valuable for later comparisons will be the results of such a survey conducted during the present still abnormal economic conditions. The results of this survey will supply the shrimp fishermen with information on production and marketing conditions as well as general information designed to aid in the more orderly and more profitable conduct of the shrimp fishery. It will thus supplement and render still more valuable the extensive and substantial contributions to knowledge that the biological researches into shrimp life history have already provided. Centered, like the shrimp investigation itself, in Louisiana, the economic survey will likewise extend to the neighboring Gulf States and will also cover the activities of the fishery along the South Atlantic coast. Similarly, also, it will be carried out in closest cooperation with the Department of Conservation of Louisiana.

The biological investigations conducted have already in the two years of their course provided more tangible results than the sum total of all previous studies carried out on sea shrimp. For the first time definite and accurately established information has become available concerning the life history, movements and seasonal activities of these forms that provide the basis for a vast Louisiana industry. It has been determined among other things that the life history has a span of but one year. This fact renders extremely important the "timing" of the shrimp fishery so that the best results in marketable size and at the same time the best opportunities for spawning by the species can be ensured.

The subject of spawning, however, is one on which very little scientific data exist. In the first place, a fertilized egg of *Penaeus setiferus*, the commercial species of shrimp, has never been found. M. J. Lindner, however, has estimated that a single shrimp may produce as many as 800,000 eggs at the single spawning during the animal's life span.

Although of such great value as the basis for a vast commercial fishery, the sea shrimp remained, until the present investigation, one of the least understood of all economically important sea animals. By the light that the results of this investigation provide, it will now be possible more accurately, more efficiently and more profitably to administer the exploitation of this southern sea resource.

Louisiana Conservation Review

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JAMES P. GUILLOT..............Editor
N. E. SIMONEAUX......Assoc. Editor

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Action Call by Roosevelt Sets July 1st Dead Line for Getting Men to Camps

Four Departments Must Top War Time Enlistment Speed to Meet Program

ANSWERING the call of President Roosevelt setting July 1 as the date limit for putting the entire Civilian Conservation Corps enrollment of 275,000 men into forest camps, the War Department has advised Robert Fechner, director of Emergency Conservation Work, that this schedule means action beyond that maintained during enlistments for the World War.

To attain this objective it was necessary for the Labor Department to select 225,000 young men for forestry work in six weeks and send them to Army conditioning camps. The War Department in turn conditions these men and installs them in forest work camps at the rate of 5,400 a day. According to R. Y. Stuart, U. S. Forester, the Forest Service has work plans ready for this forest army.

When the number of camps increased rapidly it meant that more speed had to be used. By June 1, 1679 camps had been approved, 713 on National Forests, 69 on National Parks, 374 on State lands, 348 on private lands and 193 on Indian lands, military reservations, state parks and other lands.

May 25 was set as the dead line when recommendations for the establishment of camps on State and privately owned lands would be received.

"To get the young men selected," said Director Fechner, "and sent to conditioning camps, equipped and transported to work projects in National and State Forests will require that all departments connected with this work continue to operate at top speed for the month of June. Officials of the War Department, the Labor Department, the Department of the Interior and the Department of Agriculture, now assigned to aid this office, have assured me that the full 275,000 men will be at work in forest camps by July 1."

Among the types of work which will be done by the members of the Civilian Conservation Corps, Fechner listed the following:

(1) Forest protection work which will include the construction of trails through the forests over which fire fighting units can operate speedily in event fires break out in the future, the building of fire breaks, construction of lookout towers, observatories, fire guard cabins, shelter for fire protection equipment, laying of field telephone wires and the construction of emergency fire control landing fields.

(2) Forest improvement work to include tree planting over burned out and cut over areas, the thinning out of undesirable trees, the construction of truck and horse trails and the eradication of insects and diseases which destroy large numbers of trees annually.

(3) Flood control and soil erosion work where such work will serve to protect or improve existing forested areas.

* * * "The boys in the Conservation Construction Camps, doing the above types of work, will be fighting for the welfare of their country, just as surely as were the soldiers of the World War. For our national life depends upon the proper conservation of our national resources."

Plant Colors and Their Significance in the Life of Plants and Animals

By ROBERT GLENK, Ph. M.

Curator, Louisiana State Museum

THE colors found in plants and that constitute the hues and shades of flowers, foliage and fruits in the ever changing pageants of the seasons, give rise to a sense of artistic enjoyment to the eye which loves beauty.

Color, indeed is to some of us what music is to others; the particular form of expression in which is found joy and satisfaction, hence our delight in wild Nature and in the *loveliness* of gardens.

Any systematic study of nature's colors will reward the inquirer with continual surprises as to their delicacy, intensity and finely balanced combinations. Most times they seem to be "not of one hue but of a thousand" as Kipling expressed it.

Again, they appear not as many hued but as of *one* or *two hues*, played upon by a hundred changes of color values.

Usually the tints are mingled and interwoven, ever changing with infinitely gentle gradations, so that our eyes are constantly fascinated with the shifting succession of hues.

Are we not all familiar with the great richness of the color of foliage when seen in the reddish light of the setting sun, or, again the *gleaming red and yellow* if we stand facing a mass of luxuriant green oak leaves against which the sun is shining from a direction in back of the observer?

As we analyze the color groups displayed by plants, we usually find that the various hues are closely related and harmonious. Oft times we find that through all the apparent hues which a plant displays some single color predominates, so that this one color communicates its quality throughout.

It follows that when color combinations are produced by the use of a very restricted number of hues, the results are likely to be concordant because the common factors which are present throughout tend to relate them closely and give them a mellow cast.

Each kind of plant has not only its own group of appropriately related colors, but also its individual *texture of surface* which modifies the quality of its color from the artist's standpoint and gives a particular *tonality* to all the hues.

Even in white flowers the quality of white varies greatly. For example, the white of white geranium differs from that of an Easter lily; the white of the Easter lily is unlike that of a white poppy or water lily.

The question may be asked: What is the cause of the colors which we see in objects about us? The answer is that colors have their source in light.

Light is composed of waves of various lengths and vibrating with different degrees of rapidity. When these waves of light enter the eyes they produce the sensations of illumination and color.

Whiteness is entirely due to what

The popular iris, indigenous to Louisiana, gives rise to a sense of artistic enjoyment to the eye which loves beauty.

is called "constitutional or physical effect," or in other words, the spectrum of sunlight is reflected without any absorption or selectiveness. White flowers are unpigmented, but *if any pigment* is present, the white color is modified. The same applies to white leaves, white feathers, or white hair or fibres such as cotton.

The blue color of the sky, the iridescence of pearls and opals, the metallic colors of humming bird feathers are typical structural color effects of nature.

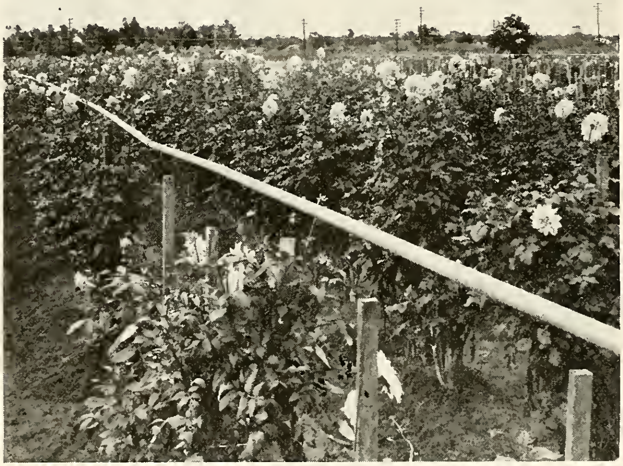
The varied colors of flowers, foliage and fruits are due almost entirely to the presence of but three groups of color producing matter.

These three important color groups in plants have received the names: anthocyans, carotinoids, and chlorophylls.

Anthocyans or "flower blues" are present in the cell fluid and are soluble colors. They are normally purple but vary from red to blue in the prismatic scale.

Carotinoids give rise to the various shades of yellow and the chlorophylls to the *various shades of green in the leaves.*

Many of the most gorgeous flowers owe their radiant beauty to anthocyan one of those marvelous manifestations of plant metabolism.


Gorgeous Dahlias "Not of One Hue But of a Thousand"

These flower colors are predicated upon the content of the distinctive anthocyan, modified by the reaction of the cell sap and diversified by association with the orange and yellow pigments present.

ANTHOCYANS

The typical anthocyan is violet in color like litmus, and turns blue with alkalies and red with acids, a characteristic which was observed 200 years ago.

This susceptibility of the anthocyans to bases and acids or the "hydrogen-ion concentration," accounts for the influence of soil acidity or alkalinity in affecting the tints of certain flowers when grown in particular localities, changing blue flowers to violet or red or red ones to blue according to the reaction of the cell sap.

In blue flowers, like those of plumbago, flax, wild chicory and corn flower, the color principle is in combination with a metallic base like calcium and magnesium, and in red flowers like pomegranate, althaea, poppy, red rose and crepe myrtle, the particular anthocyan is linked with an acid radicle in the cell sap.

These reds and blues are not limited to flowers only, however, as grapes, cherries, strawberries, cranberries, apples, plums, red beets, red cabbage, radishes, rhubarb and red sugar cane contain anthocyan either in the skin or pulp.

The flower colors are quite fugitive in comparison with aniline dyes and serve no useful application in the textile arts as dyes, although they possess tinctorial powers.

The dissolved color principle present in them, is what gives rise to the color of fruit juices, wines and jellies.

Anthocyans are glucosides or compounds of the hexose sugars such as glucose, in combination with peculiar pigments called collectively anthocyanidins.

Anthocyans may be regarded as a chemical class in the same sense as are the proteins, carbohydrates or fats.

It has been practically established that the various anthocyan molecules contain similar nuclei no matter how much they differ in color from one another. The wide variations of tint of these glucosides are ascribed to slight variations in constitution but which have the main anthocyan base intact.

CAROTINOIDS

Yellow and orange colored flowers like the marigold, goldenrod, sunflower, dandelion, and daffodil, owe their tints to the presence of carotinoids, primarily, while the orange, brown, and salmon pink shades of pansies, sweetpeas, nasturtiums and other varieties of flowers are due to a combination of carotinoid pigments with soluble anthocyans.

In ripe tomatoes, red peppers and in watermelon pulp, the characteristic tint is due to red carotinoids or lycopin, identical in chemical composition with carotene.

The carotinoids are almost invariably found in growing leaves accompanying the chlorophylls, but they are usually not in evidence when the chlorophyll is present in normal quantity, that is, about 6 10ths to 1½% of dry substance, but they do modify the green tint of the leaves to some extent.

In summer, nearly all leaves are some shade of green, from dark of the magnolia to yellow green of pomegranate, due to chlorophylls.

Towards the close of summer, when leaf green ceases to be formed and gradually fades away, the foliage in forests and fields develops for a short space of time, gorgeous shades of yellow and red.

These autumn colors are in the main caused by carotinoids or mixtures of carotinoids and anthocyans. The carontinoids, co-existing with the chlorophylls, are more resistent to discomposition than the latter and appear in their full beauty when the life processes in the leaf are retarded.

Anthocyans are not notably present in summer foliage, but their formation comes about when the sugar content of the leaves increases, due to sluggishness of circulation of plant sap and when *sugar* formed in the cells of the leaf is no longer transported to other parts of the plant and thus accumulates locally.

Anthocyans are oftener found in stems than in leaves and more common on the under side of leaves.

In many water plants the *under side* of the leaves is of a fairly intense reddish or purplish hue, while the *upper side* may be at the same time a glossy green.

However, brilliant the autumn leaf hues may appear when reflected from the surface, the colors are still more intense when viewed in transmitted light, and colors rivalling those of stained glass are common.

Sunlight is a decided factor in the development of autumn coloration, for without sunlight, anthocyans will not be formed even though the sugar content be adequate.

The weather conditions are yet another factor in the production of autumn colors, for if a cold snap sets in suddenly and while the leaves are full of sap, anthocyans will be formed in great abundance and sweet gums, sycamores, hackberries, poplars and tulip trees will present their finest display of crimson and yellow.

If, on the other hand, dry weather prevails and cold comes very gradually as is so often the case in South Louisiana, only a meagre quantity of reds and yellows will appear and our November landscapes will be disappointing so far as autumn colors are concerned for the leaves merely turn brown and fall to the ground.

While colors in the plant world contribute immensely to the charm and beauty of the landscape, the functions of these color constituents in the life of the plant are of the highest importance in the economy of nature.

Dr. L. H. Bailey, the distinguished horticulturist, disliked to have persons say that they "love flowers." They should love *plants* and thus have a deeper hold on nature. *Intellectual* interest should go deeper than mere shape or color, one should know how the plant lives and developes.

Growing vegetation is a laboratory in which some of the most complex substances known to organic chemistry are built up from two simple inorganic materials, namely carbon dioxide gas of the air and the watery fluid brought up through the roots from the soil and united by the sun's rays through the action of chlorophyll.

CHLOROPHYLL

From these substances alone, the living plant is able to prepare its supply of carbohydrates consisting of cellulose, starch and sugars and of certain nitrogen containing compounds called proteins, upon which its life and growth depend.

This bio-chemical process is truly the *fundamental basis of the whole of terrestrial life* but the mystery of it all resides in the fact that no one knows what actually takes place in the plant to produce these astounding results.

Chlorophyll is the most significant organic substance in nature because all other vegetable substances are synthesized through its direct or indirect action.

While the leaf green or chlorophyll is so essential in the normal functioning of plant life, it does not itself join permanently in the reactions but rather seems to act as a catalyst causing the reactions to take place, but is not itself a part of either the original materials or of the end products.

Chlorophyll exists in living leaves either in solid form, or, perhaps more correctly stated, in the form of a colloidal solute. In reality leaves contain two green pigments closely resembling each other in properties and composition. Both form microscopic crystals insoluble in water but easily soluble in alcohol, acetone and chloroform.

Spectrum analysis of the chlorophylls is resorted to test the purity and absence of decomposition of the substance.

The absorption spectrum of chlorophyll exhibits a strong and very characteristic absorption band in the red part of the spectrum and the green color is largely due to the absorption of the red rays of sunlight.

Scientists at the last American Association for Advancement of Science meeting, told of the intensive efforts being made towards an understanding of chlorophyll which is recognized as the most effective agent in capturing the radiant energy of the sun so that it may be utilized.

Chlorophyll was said to be the *"Key to coal production"* in the distant past, and probably also the *"Key* to *petroleum production"* as well.

Sunshine plays a much more important role in plant life than it does in the animal Kingdom. The higher plants cannot exist without it, but some angiosperms, like aspidistra and ivy seem to prefer shady places.

The chlorophylls utilize not only the invisible rays but also certain wave lengths of the visible spectrum of sunlight as the activating agent in the photosynthesis of carbohydrates from the carbon dioxide of the atmosphere and water from the ground.

A suggestion as to the possible procedure of photosynthesis in the reduction of carbon dioxide by chlorophyll lies in the fact that the chlorophyll molecule contains an easily dehydrogenated group and the end product of this reduction is a dehydrochlorophyll or chlorophyll B.

Energy furnished by sunlight would serve to regenerate the chlorophyll A.

The very large amount of energy which must be supplied to the carbonic acid before the synthesis of the hexose sugars takes place in the leaf of the plant, is a particularly important fact to be considered in photosynthesis. A minimum quantity of energy equal to 673,800 calories is required to generate one gram molecule (180 grams) of glucose out of carbon dioxide and water, by this mysterious function of the chlorophyll. By another investigation it was ascertained that under favorable conditions one gram per hour of carbohydrate is produced for each square metre of leaf surface exposed to sunlight. This yield, though trifling for a single leaf, the aggregate for all the leaves in nature is truly prodigious.

The trees of the forest and the vegetation of the fields are built up of the material produced in the tiny laboratory of the plant cell through the agency of chlorophyll and sunlight.

How very essential to our existence are these products produced in the leaves of plants by these agents is realized when we reflect that our clothing, be it of cotton, linen, or rayon; our houses, built of wood; our food in the form of fruits or vegetables consist entirely of plant products.

Even though our clothes are made of wool and we were to live on a meat or milk diet, we still would be dependent upon vegetation, for sheep and cattle require grass for sustenance.

"Verily, all flesh is grass" as the prophet Isaiah has stated in the Bible.

Chlorophylls are very difficult substances to study because of their great instability.

They are ester like compounds of carbon, hydrogen, oxygen, and nitrogen combined with magnesium.

While chlorophylls contain no iron, it is a strange fact that these plant pigments will not develop if the soil lacks this particular element, and that the "chlorosis" disease of plants is remedied by the addition of iron to the soil.

The action of chlorophyll was shown to be independent of the living plant cells. An experiment made with pulped clover leaves after the removal of all living cells and leaving only the chlorophyll and the cell contents in a mixed and fluid condition had light turned upon it under various conditions of temperature, acidity, etc.

Luminous bacteria that shine when oxygen strikes them, were used as sensitive detectors of chemical activities of the chlorophyll mixture.

Their shining showed that the mixture though certainly dead by all accepted criteria, was still able to function as an absorbent of carbon dioxide with liberation of oxygen similar to *photosynthesis* in living plant tissue.

The atmosphere, roughly speaking, is composed of 4/5 nitrogen and 1/5 oxygen and this ratio is tolerably uniform.

However, in the respiration of all animals and in the burning of fire, oxygen is withdrawn from the air and converted into other compounds.

By growing plants, under the influence of sunlight, one of these components, namely *carbon dioxide,* is decomposed and oxygen is again liberated.

Carbon dioxide is one of the most constant and important of the minor constituents of the air. It is normally present to the extent of about three (3) volumes in 10,000 of air.

From several sources carbon dioxide is being continually added to the air. The *combustion of fuels,* the respiration of animals and the decay of *organic matter* all generate this gas. From mineral springs and volcanoes it is given off in large quantities.

The annual consumption of coal adds yearly about 1/1000 of its present content $CO2$ to the atmosphere.

Were there no counterbalancing of this increase in atmospheric carbon, animal life would soon become impossible on the earth. At three (3) parts in ten thousand, the CO2 content of the atmosphere surrounding, the earth amounts to the incomprehensible sum of two (2) million, two (2) hundred thousand *million* tons.

On the other hand, the consumption of CO2 by plant life is computed to be more than equal to that produced annually by the respiration of animals and the combustion of fuels, most of which is permanently withdrawn from the air.

These calculations are likely to be far short of being accurate but they serve to emphasize the fact that the cosmic order of things is well synchronized to meet the needs of animate existence.

The carotinoids or yellow plant pigments are of several kinds.

Carotene, one of the most important of these pigments, forms golden green lustrous crystals. In chemical composition it is a hydro carbon with the formula C40 H56.

Xanthophyll, another yellow pigment, has the same composition with the addition of 2 oxygen atoms (an oxidation product of carotene). These yellow pigments are insoluble in water and are associated with specialized *protoplasmic bodies* in plants.

The carotinoids, while very generally distributed in the vegetable world, are by no means confined to plants alone.

The yellow color of egg yolks, chicken fat and skin coloring of the feet of poultry is due to carotene.

It has been observed that when a hen stops laying eggs, the skin becomes more yellow. This fact affords the poultry keeper a means for distinguishing those members of the flock which have become unprofitable.

As early as 1881 it became known that a factor essential for proper nutrition was contained in milk, cream, and butter, but it was not until 1922 that it became clear that this factor was related to those red and yellow substances found in carrots and tomatoes, leaves and flowers known as carotinoids.

Many investigators noted that this active food substance was usually associated with these plant colors and the idea gradually was advanced that there must be some direct relationship between them. Finally *biologists* obtained striking and positive results on feeding carotene to animals. They further substantiated the similarity of the carotinoids and this food principle by getting identical color reactions with antimony trichloride and other verifications.

The concept of the vitamins is a very recent thing, and this food principle carotene was given the name Vitamin A.

Recent work has thrown considerable light upon the chemical structure of carotene and its importance as the probable precursor of Vitamin A and it has been announced just lately that the vitamin itself has been prepared from carotene.

It was believed that a specific grouping of the molecule is responsible for its activity, and it now seems clear that carotene maybe changed to Vitamin A in the animal body (perhaps in the liver) and that the change is enzymatic in nature.

The change presumably takes place by the breaking in two of the carotene molecule of which betaionone or artificial violet perfume forms the larger part and the remainder of the vitamin formula seems related to the isoprene unit of the rubber molecule and is alcoholic in structure.

Efforts to carry on investigations on Vitamin A itself have been hampered by scarcity and high cost of pure crystalline carotene which has been quoted at $10,000 per pound. A new process developed by the chemists of the United States Department of Agriculture will make this very important substance available at a very much lower price and will enable physicians to give it to their patients as an addition to the regular diet.

Vitamin A is indispensable for body growth and tissue development.

Deficiency in Vitamin A is potentially productive of a variety of disturbances in health not immediately indicative of any definite disease because the body possesses stores of the vitamin in the fatty deposits. It is only after months that the effects of deprivation of the vitamin become strikingly crystallized into specific deficiency disease.

Vitamin A prevents the development of certain types of eye disorder, and has lately been said to have the power to increase bodily resistance to infections such as colds. It increases the appetite and maintains health and vigor in humans and animals.

Vitamin A is present in butter, cheese, cream, milk, eggs, carrots, tomatoes, orange juice, spinach, lettuce, cabbage, watercress, and alfalfa.

Vitamins are stores of high energy or "bottled sunshine" so to speak and may in the future play a very important part in human life.

We know about the distribution and relative abundance of these vital plant principles but no one has succeeded as yet in actually *duplicating* the biochemical processes in the laboratory, nor do we know how these substances are produced in the plant cell.

The vegetative pigments undoubtedly serve as

(Continued on Page 47)

Annual Report of the Division of Fisheries, Year 1932

By JOHN B. DAUENHAUER, Jr.
Director

THE purpose of this report is to give a brief outline of the activities of this Division for the year ending December 31st, 1932.

From the fishermen's point of view, and, as far as revenues derived by this Department from licenses and taxes collected by this Division, it has not been very encouraging.

Commercial fishermen being unable to realize satisfactory prices, delayed taking out netting licenses; and this, together with the Shrimp Fishermen's strike, reduced the revenues of this Division far short of the year 1931.

As a result of these conditions the total number of pounds of both Fresh and Salt Water Commercial Fish was considerably reduced. The catch of shrimp was likewise affected, thus slightly reducing the canning of this product. Statistics show that the number of pounds of shrimp caught in 1931 amounted to 37,551,183 pounds, while in 1932 the commercial production for the State of Louisiana shows 35,159,968 pounds, a very small decrease in the production of Salt Water Shrimp.

An industry in the fisheries of the State, which has developed to quite a proportion, is that of Crab Canning. The Louisiana Packers succeeded in developing the process of this delicious sea food to the highest efficiency, having produced 1,041,091 pounds of crabmeat having a wholesale value of $218,629.11 during the year 1932—which far exceeds that of the year 1931.

The number of licenses issued and the amount of revenue derived from the Fresh Water Fisheries of the State, show in the table below:

	1932	
	No. Issued	Value
Wholesale Fish Dealer's Licenses	108	$10,800.00
Wholesale Agent's Licenses	133	1,330.00
Retail Fish Dealer's Licenses	786	3,930.00
Hoop-Net Licenses	573	2,865.00
Trammel Net Licenses	26	275.00
Gill Net Licenses	7	180.00
Seines	90	2,100.00
Angler's Licenses	----	10,595.00
Total Amount of Revenues derived from Fresh Water Fisheries		$32,075.00

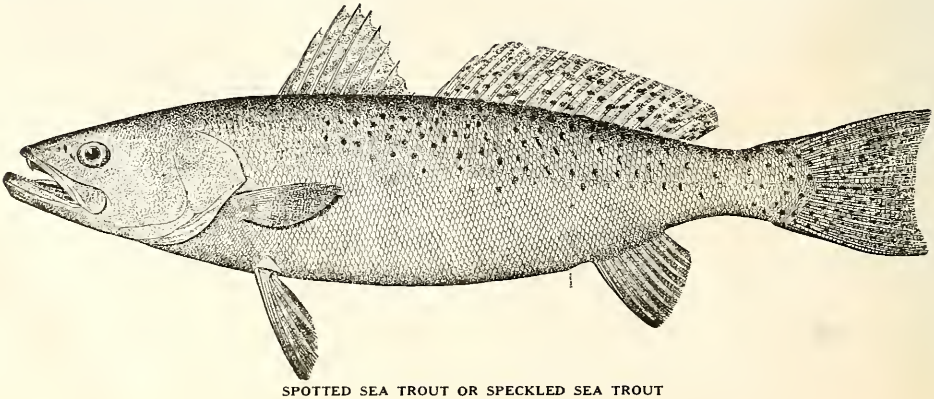
These Fresh Water Fisheries comprise the following species: Catfish, Gaspergou, Spoonbill or Paddlefish, Buffalofish, Frogs, Terrapins, Turtles, Crayfish and miscellaneous species such as Carp and Drumfish. These are the marketable commercial species of fresh water fish, of which there were taken from the Louisiana waters for the year ending December 31st, 1932, the following number of pounds:

Species	No. of lbs.	Value
Catfish	3,159,614	$ 284,365.26
Gaspergou	1,934,175	96,708.65
Spoonbill	195,380	11,722.80
Buffalofish	4,841,746	290,504.76
Terrapins	275 doz.	5,500.00
Fresh Water Turtles	130,895	19,634.25
Crayfish	346,400	27,712.00
Frogs	1,206,355	265,398.10
Miscellaneous	36,900	4,763.20
	11,851,740	$1,006,309.02

The above values are at the fishing grounds, and to this must be added the value of the product to the dealers and retailers, which will give the approximate value of the Fresh Water Fisheries in the State of Louisiana.

SALT WATER FISHERIES

The number of licenses issued and the amount of revenue derived from the Salt Water Fisheries of the State show in the Table below:



SPOTTED SEA TROUT OR SPECKLED SEA TROUT

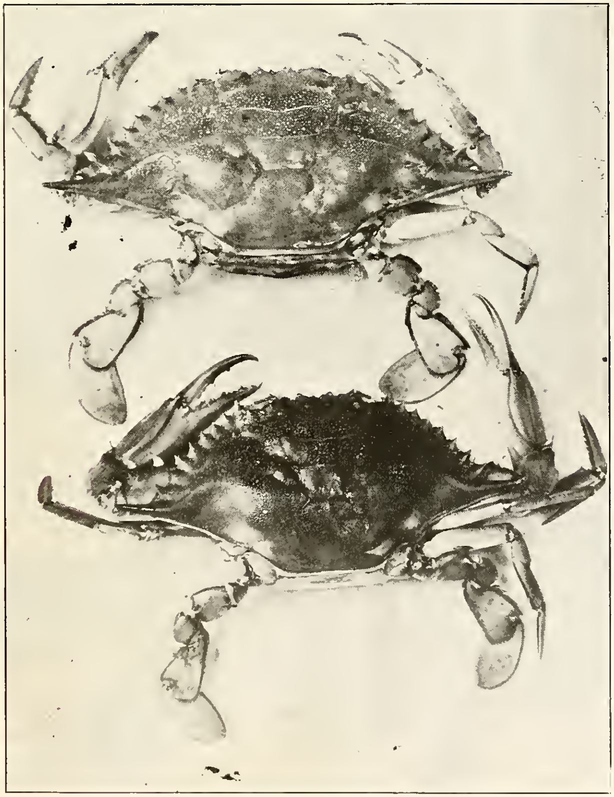
	1932	
	No. Issued	Value
Seines	27	$ 270.00
Trammel Nets	34	340.00
Shrimp Trawls	699	6,990.00
Shrimp Seines @ $5.00	67	335.00
Shrimp Seines @ $15.00	66	990.00
Shrimp Freighters	134	670.00
Resident Salt Water Shrimp Drying Platform Licenses	19	285.00
Resident Salt Water Shrimp Canning and Packing Licenses	25	625.00
Total Amount of Revenues Derived from Salt Water Fisheries		$10,505.00

These Salt Water Fisheries of Louisiana comprise Speckled Sea Trout, Red Fish, Sheepshead, Flounders, Crabs, Shrimp, and the number of pounds and valuation taken from the waters of Louisiana, show in the Table below:

	1932	
	lbs.	Value
Speckled Sea Trout	214,256	$ 19,283.04
Red Fish	140,182	11,214.56
Sheepshead	29,212	2,336.96
Flounders	24,807	2,480.70
Sea Turtles	133,830	20,074.50
Common Salt Water Fish	109,981	8,798.48
Hard Shell Crabs (dozens)	410,010	32,800.80
Soft Shell Crabs (dozens)	121,460	30,365.00
Crabmeat, pounds	1,041,091	218,629.11
	2,224,829	$345,983.15

To the above must be added the value of the product to the dealers and retailers, which will give the approximate value of the Salt Water Fisheries of the State of Louisiana, as the figures shown above are taken at the fishing grounds.

To the Salt Water Fisheries of the State, must be added the commercial production or catch of Salt Water Shrimp, from which the State derives Severence Tax on Shrimp taken from the waters of the State, and the Table below will show the amount of tax collected by this Division on this industry as well as the number of pounds produced in the year ending December 31st, 1932:



THE BLUE CRAB
Callinectes sapidus

REVENUES FROM SEVERANCE TAX ON SHRIMP

Severance Tax on Green Shrimp Sold Fresh or for Canning purposes:

Resident ....93,637 bbls. @ 10c	$ 9,363.70
Non-Resident ....15,056 bbls. @ 10c	1,505.60
Inspection Fee on Exported Shrimp, 15,056 bbls. @ 10c	1,505.60
Total Tax collected on Green Shrimp	12,374.90
Severance Tax on Dried Shrimp, 1,408,306 pounds @ 35c per 100 pounds	3,669.05
Total Amount of Taxes collected on Shrimp for the year ending December 31st, 1932	$16,043.95

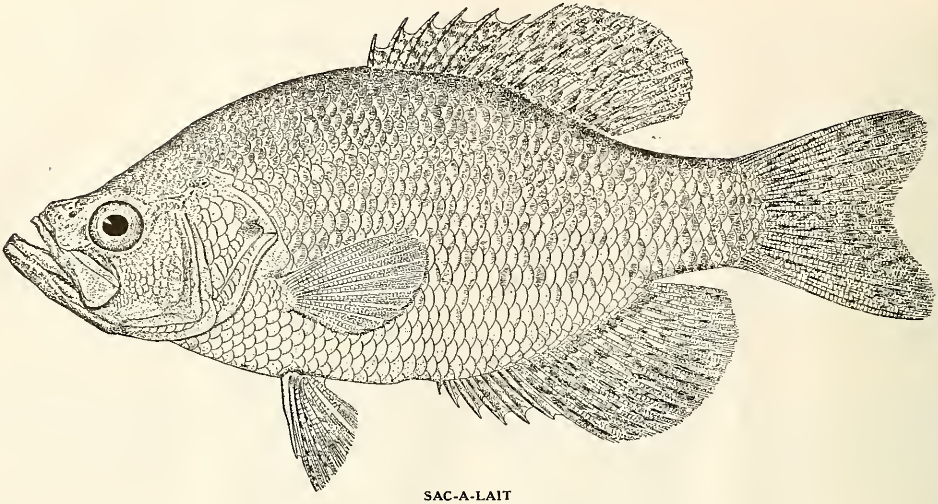
	bbls.	lbs.	Value
Sold for home consumption in green state through local markets, at 210 lbs. to bbl	7,402	1,554,420	$ 31,088.40
Sold in green state for Canning and packing purposes	86,235	18,109,350	362,187.00
Sold in green state for Canning purposes in State of Mississippi	15,056	3,161,760	63,235.20
Sold for drying purposes 1,408,306 lbs. 8 3/4 lbs. of green shrimp to 1 lb. of dried shrimp		9,172,677	183,453.55
Total amount of pounds of shrimp produced for marketable purposes and valuation at the fishing grounds	108,695	31,998,207	$639,964.15

The Grand Total of Revenues derived from the Fisheries of the State of Louisiana are as follows for the year ending Dec. 31, 1932:

Fresh Water Fisheries	$32,075.00
Salt Water Fisheries	10,505.00
Severance Tax on Salt Water Shrimp	16,043.95
Grand Total of all Revenues	$58,623.95

The United States Census Report for the year 1908—gave the production of the Total Shrimp Industry of the United States, as 14,374,000 pounds, of which this State produced 8,580,000 pounds or approximately 60%. It was further reported that of the entire production of the United States, the Gulf Coast Region supplied a total of 12,561,000 pounds, the State of Louisiana producing about 60% of all the Shrimp of this region for the year.

The commercial production of shrimp for the State of Louisiana during the years following are:



SAC-A-LAIT

	Pounds	Value
1913	10,500,000	$ 525,000.00
1914	11,000,000	550,000.00
1915	12,000,000	650,000.00
1916	18,000,000	900,000.00
1917	12,000,000	600,000.00
1918	15,000,000	800,000.00
1919	16,000,000	880,000.00
1920	32,000,000	1,760,000.00
1921	34,232,652	1,026,979.00
1922	22,900,490	687,014.00
1923	32,289,416	968,682.00
1924	31,631,124	1,007,089.00
1925	32,502,094	1,137,573.00
1926	26,033,088	911,158.00
1927	31,688,248	1,109,089.00
1928	41,013,719	1,378,455.00
1929	44,106,956	1,542,053.00
1930	41,485,556	1,351,994.50
1931	37,551,183	1,314,292.00
1932	31,998,417	1,119,944.60

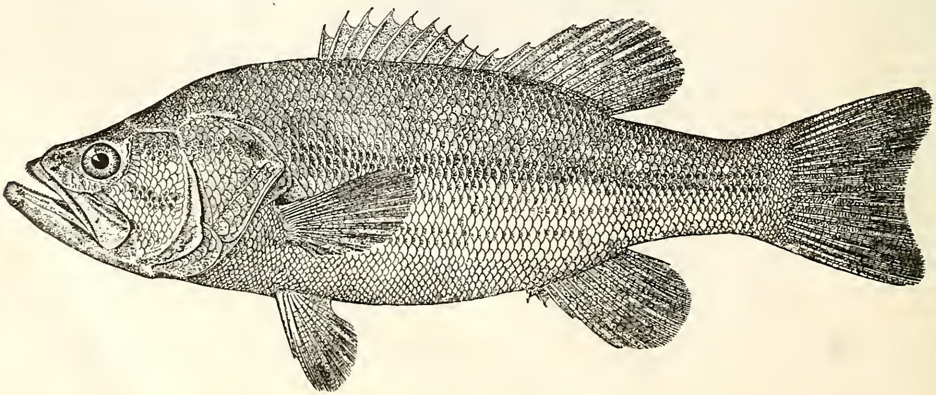
FISH HATCHERIES

Under the supervision and direction of this Division are the six fish hatcheries maintained by the State of Louisiana for the cultivation and propagation of game fish. These hatcheries are now in operation, and during the early winter until spring game fish such as Large and Small Mouthed Black Bass, Warmouth Bass, Sunfish, Bream and Crappies are distributed to the numerous applicants applying for game fish to restock private as well as public waters of the State where streams have been depleted.

STREAM POLLUTION

The State of Louisiana has been confronted with the problem of stream pollution, and this largely due to the geographical position of our State, which receives from a number of states water which contains poisons thus causing the pollution of our streams. As a consequence large streams and rivers in this State are depleted of fish life.

The causes of pollution of waters of the State are largely from oil wastes, paper mills, sugar mills and other numerous and varied causes. All cases are investigated by this Division with a view of ascertaining the causes, and thus far very satisfactory results have been obtained.



GREEN TROUT OR LARGE MOUTHED BLACK BASS

Tarpon and Tarpon Rodeos in Louisiana

Where Sportsmen Meet Annually

By
FORREST V. DURAND,
Assistant Biologist, Bureau of
Research and Statistics

EVERY year during the last few days of August, a number of ardent sportsmen head for the waters of Barataria Pass, where annually the Grand Isle Tarpon Rodeo is held. Here at this picturesque spot the waters of Barataria Bay meet those of the Gulf of Mexico. On one side stretches romantic Grand Isle, and on the opposite side lies Grand Terre, site of old crumbling Fort Livingston where once Lafitte's home stood. Over these waters in past times this famous pirate plied his nefarious trade. Here for three days each year Louisiana's most expert Tarpon fishermen match their strength and cunning with that of this mighty monarch of sport fishes. Most of these men hail from the vicinity of New Orleans, or at least from southern Louisiana, but each year a number of men from distant parts of the United States also participate in one way or another. In 1932 for instance, John Held, Jr., the famous New York artist was present.

Photograph copyright by Mr. Henry E. Belden
A FIGHTING SILVER KING
A bit of action in Louisiana coastal waters.

It is the writer's purpose in this article to set forth a brief review of these rodeos since their beginning in 1928, giving some of the most interesting facts concerning each one, and some of their respective results. Some of the few authenticated facts regarding the little known life history and habits of the Tarpon will also be included. It was thought that these would be of interest both to the Tarpon fishermen and to those concerned in the fish from a purely scientific or naturalist's point of view. However, the writer's main idea in preparing this account was to help bring about a greater realization of the abundance of Tarpon to be found along the Louisiana coast, and to give those who are interested some idea of how, when and where they may participate in the sport with the greatest enjoyment and success. This, by the way, is a sport in which one may indulge without any pain of conscience regarding depletion of supply, which one sometimes feels while hunting our fast disappearing deer, wild turkey, water fowl, and other game.

So far as rod and reel fishing is concerned, there is practically an indefinite supply of Tarpon in the countless numbers which populate the waters of the Gulf of Mexico and Caribbean region.

Tarpon atlanticus (Cuvier and Valenciennes) known coloquially as Tarpon, Silver Tarpon and Silver King, Caffum, Savalo and Grand Ecaille is principally a fish of the Gulf of Mexico, the Caribbean Sea, and the coastal waters of these seas. However, it does straggle northward along our Atlantic coast as far as Cape Cod. It seems to be able to adapt itself to a considerable variation, both in temperature and salinity. The highly saline Gulf of Mexico is its home, and up to a considerable distance from shore, the near fresh costal streams of Louisiana, Florida, Texas and Mexico are also. Its range of adaptability in regard to temperature is apparently not so great. The Tarpon is not found along our southern coast during the winter months. It leaves Louisiana water during the last part of September, and returns to this region during the early part of May. Just what movements it makes during this time are not known. On rare occasions single individuals have been found in very cold climates during winter months.

Knowledge regarding the life history of the Tarpon and its movements before reaching the adult stage resembles a chain with many links missing. The links which are present are scattered about and entangled with one another.

Another comparison might be a jig-saw puzzle with many parts missing. The facts which follow were secured from L. L. Babcock's work entitled, "The Tarpon," a privately printed book, the second edition of which was published in 1930.

From November until April which is approximately the time during which these fish are absent from our southern coast, they congregate in large numbers in the Panuco River near Tampico, Mexico. It is thought by some that they spawn here but there seems little to support the theory. Fish ready to spawn have been caught during the summer months in Texas and Florida waters. Some of these fish were so ripe that when a slight pressure was applied to the females' bodies, they ejected eggs, and the males cast out milt while leaping at the end of a line. These fish must have been near their spawning ground. The earliest form of the Tarpon after hatching from the egg is thought to be a leptocephalid form, found in some fishes in the young stage. This is a ribbon shaped body entirely different from the fish which finally develops. A leptocephalid thought to be a larval Tarpon was caught in a brackish stream five miles in shore near Beaufort, North Carolina, by United States Bureau of Fisheries workers. Although it is fairly certain that this was a larval Tarpon, the specimen was accidentally destroyed before a definite and positive identification could be made.

Photograph copyright by Mr. Henry E. Belden

Splendid Grand Ecaille Captured by Surf Casting at Wine Island, Louisiana

As the next link in our chain, small Tarpon having the adult form and measuring in some instances as low as two inches in length have been found over a very wide area and under varying conditions. During both summer and winter months, they have been found in rivers near the Florida coast. Some of these measure less than one foot, and weighed less than two pounds. In 1931 Mr. Babcock found some measuring from eleven to nineteen inches in a muddy fresh water railroad ditch on Gasparilla Island near Boca Grande, Florida. This ditch was quite a distance from any shore, and just how they got there cannot be surmised unless they were carried inward by a very high tide. On other occasions, young Tarpon have been found in similar land-locked ponds and bodies of water. In Porto Rico and in Haiti, they have been found in brackish ponds and stagnant lagoons, near the shore. It is thought that they spawn near these islands and as some of the young found in the Haitian lagoon were only two inches in length, the theory is in a measure borne out. Some of the Florida fish from the Gasparilla ditch were removed to a completely fresh water pond, where according to Mr. Babcock after two years in their new environment they are still healthy and vigorous. This is quite a contrast to the salty waters near the Panama Canal, where young Tarpon have been caught on a fly rod. Evidence seems to point to the fact, that the fish has a very slow growth rate and it is believed to reach a great age.

From the above facts, as given by Babcock the writer is inclined to believe that the Tarpon spawns over a very wide area rather close to the shore; that the young spend the early part of their lives near these shore lines, or in the nearby streams and small bodies of water; and finally that they leave these parts after reaching a certain age, going to the open sea and do not return to the coast until fully grown. However, if the reader has another theory, his is probably just as near the real solution of the puzzle.

Sportsmen would be of valuable assistance to science if they would examine all Tarpon caught, determine the amount and condition of the eggs or milt contained, and record this with proper data concerning the date and place. The Bureau of Scientific Research and Statistics, of the Louisiana State Department of Conservation, would appreciate greatly any such records.

Regardless of how they reach this stage or what transpires in the intervening time, adult Tarpon appear in countless numbers along the Louisiana Coast, during the summer months. In the Barataria Bay and Four Bayou region, they seem to follow the schools of Menhaden or Sardine, *Brevoortia tyrannus* (Latrobe) or *Brevoortia patronus* Goode. The size of some of these schools is remarkable. The writer from the deck of a boat anchored in Barataria Pass, has observed the water churned into a commotion by these fish as far as it was possible to see, up Barataria Bay on one side and the same distance out into the Gulf on the other. The great silver bodies of Tarpon could be seen rising to the surface and darting about in this great school on all sides. To put the estimate very conservatively there must have been hundreds of them within eyesight. The writer has seen the same thing occur in Four Bayou Pass on a somewhat smaller scale. Mr. Henry D. Whiton and Dr. Charles Haskins Townsend, have observed and recorded countless numbers of Tarpon in the lower part of the Calcasieu River. At this place they were feeding on Cutlass Fish, *Trichiurus lepturus* Linnaeus. On other occasions great numbers have been recorded along the coast of the Pelican State, and for years a limited number of sportsmen have, in these waters, battled with this silvery knight of the sea. The number was and is still limited, due to a lack of knowledge of the abundance of the fish in this area.

In 1928 a group of New Orleans sportsmen, realizing that there were as good Tarpon fishing grounds around Grand Isle as any other place along the Gulf Coast, organized the Grande Isle Tarpon Club, and elected Hugh Wilkinson, New Orleans attorney and sportsman as their first president. The primary purpose of this club was to sponsor a Tarpon Rodeo to be held at Grand Isle each year during the last part of August. Certain rules were drawn up and prizes decided upon. The most important prizes are three silver cups given each year by Hugh Wilkinson, John Donovan and Alfred Danziger to the captor of the largest fish, the second largest fish, and the greatest number of fish. Full details regarding entrance fees, rules and other prizes, can be secured by writing to the Louisiana State Department of Conservation.

Thus, each year, the last days of August find an increasing number of boats converging on the Tarpon grounds of Barataria Pass. In 1928 eight Tarpon were brought to gaff. Mr. E. N. Moore, Judge Wayne G. Borah, and Mr. George Baker, were prize winners. The 1929 Rodeo was handi-

(Continued on Page 34)

Photograph copyright by Mr. Henry E. Belden

THE TARPON LEAPS
The Beginning of the Battle

Shall Not Our National Government Under Its Present Leadership Apply Real Conservation and Economy to the Mississippi System of Flood Control

With Particular Reference to Stabilization of the Mississippi's Banks, Levees, Roads, and Property?

By
CLARENCE S. HEBERT,
A. M., L. L. D.

EDITOR'S NOTE: *This article, specially written for the Louisiana Conservation Review by Hon. Clarence S. Hebert, prominent attorney of the Louisiana Bar, is of particular significance by reason of the writer's lifetime observations of the behavior of the Father of Waters and his long term of office in the Government service as sub-treasurer under President Theodore Roosevelt and Collector of Customs of the Port of New Orleans during the Taft Administration.*

HAVING been offered the opportunity by the Editor to express my observations concerning the Mississippi River for the past fifty years, in the Louisiana Conservation Review, I gladly avail myself of this offer to present at least a few facts within limited space on the all important subject "Stabilization of the banks of the Mississippi River in relation to conservation and economy as a Federal project and in line with the National Government's present program."

I believe that this is one of the really live issues before the people of this State; and especially so at the present time when we have a farsighted pioneer at work among us in the person of Honorable Wade O. Martin, Chairman of the Public Service Commission, who advocates building of public roads on top of the levees. His views and what may be said on the subject proves true of many of the other valley states, as well as Louisiana.

Commissioner Martin's proposition is not as bizarre as it appears to be at first blush, but it is out of the question until the banks of the river are stabilized and the location of the levees are made permanent. Therefore, the two propositions should be coupled and every dogged effort made to put both over simultaneously if the project is to succeed.

Who Owns the River?

The river belongs to the nation,
The levee, they say, to the state;
The government runs navigation,
The commonwealth, though pays the freight.
Now, here is the problem that's heavy—
Please, which is the right or the wrong?—
When the water runs over the levee,
To whom does the river belong?

It's the government's river in summer
When the stage of the water is low,
But in spring when it gets on a hummer
And starts o'er the levee to flow;
When the river gets suddenly dippy
The state must dig down in its till
And push back the old Mississippi
Away from the farm and the mill.

I know very little of lawing,
I've made little study of courts,
I've done little geeing and hawing
Through verdicts, opinions, reports;
Why need there be anything more said
When the river starts levees to climb,
If the government owns the aforesaid
It must own it all of the time.

If the bull you are leading should bellow
And jump over somebody's fence,
There isn't much doubt you're the fellow
Expected to bear the expense;
If it follows a Sunday school teacher
And chases the maid up a tree,
You're the owner the same of the creature
Undoubtedly all will agree.

If some time should somebody's chickens
Get into your garden and dig
And pull up the plants like the dickens,
Or somebody's bull pup or pig,
The owner thereof cannot blame it
On you or some party remote;
The owner thereof can't disclaim it
The chick or the pup or the shoat.

If it's your Mississippi in dry time,
It's yours, Uncle Sam, when it's wet;
If it's your Mississippi in fly time,
In flood time it's your river yet.
There's no other way you can make it,
And so, when I give the alarm,
Come get your darned river and take it
Away from my timber and farm!

DOUGLAS MALLOCH,
in "American Lumberman."

Any reader of this writing who may be interested in these two propositions can go on the levee from Walnut Street to Carrollton Avenue and see both projects in actual operation. He will see a levee protected from caving and from wave wash by wood piling; and he will see a levee so big, so broad, and with such an immense crown that there are roadways, parking space for automobiles, government offices, storerooms, garages, etc. On a busy day he may see as many as one hundred autos parked on top of the levee at one time. There is a four-hole golf course, with club rooms on top of this levee. This golf course is probably 500 feet long and 250 feet in width.

This particular levee is permanent; hence the expenditure of thousands of dollars in buildings, roads, etc., on its top by the United States Government, and it must be remembered that the Government never builds for a day, a week, or a month; the Government builds for permanence.

The project here advocated is not so difficult, nor will it be so expensive as it seems.

On the contrary, it is easy. It will save money in the long run; it will give employment to untold thousands of men—gainful employment—at a time when the Government is casting about for exactly that; and, above all things, it will make the Mississippi River a great public asset as an outlet to the sea for that vast range of country between the Allegheny and the Rocky Mountains, a great national highway over which commerce can be moved at all seasons of the year and at all stages of the water.

Consider for a moment that in the last half century the levees in South Louisiana have grown from little hills five and six feet high with a twenty foot base to huge mounds of earth as much as twenty-eight feet high and with a base, in some places, of one hundred feet; that there are places between Red River Landing and New Orleans where these levees have been moved back three or more times; each moving entailing huge expense, the loss of our most valuable real estate, the moving back of residences and farm buildings, destruction of vegetable and flower gardens, and, first and foremost, the complete change of the owner's plans, wiping out in many places beautiful and artistic settings of years of trees, etc.

There is nothing permanent about property on the banks of the Mississippi River at the present time. At Bayou Goula in Iberville Parish, a cemetery over fifty years old, setting back more than a half mile from the river when it was first opened, was finally reached on the third building of the levee and the bodies had to be moved, when they could be moved, some to New Orleans, others to St. Raphael Cemetery four miles up the river; but, many remaining in the ground under the new levee, or behind it on the riverside.

The same thing happened at the old brick church near St. James Station in St. James Parish on the West bank. And there is now a threat of the same destruction to the cemeteries at Brusley Landing in West Baton Rouge Parish, at St. Gabriel in Iberville Parish and at Convent in St. James Parish.

No one can estimate the number of pecan trees, for example, that have been destroyed in the building of new levees between Baton Rouge and New Orleans in the last twenty years. These trees are valuable. They take a long time to develop as money producers, but they are a source of real revenue when they commence to bear. Mr. Guillot and I, on a recent trip to Convent in St. James Parish, stopped to pay a call on my old friend, Fr. Delahaye at Paulina, La. I reminded the good father that the last time I saw him he was busy gathering and sorting out his crop of pecans at St. Michael's at Convent. Well, he remembered it, and he told us how carefully he had labored, year after year, with this crop; and he made the astounding statement that one year his crop of pecans had netted him $1,200.00.

This destruction of valuable property, levees, roads, yards, buildings, trees, gardens, etc., and of old landmarks in the shape of cemeteries, might be suffered in silence, if there were no way of avoiding it; but it can be avoided. All property along the river can be made permanent by stabilizing the banks, and, at the same time, the people can get assurance that there will be no more crevasses; and steamboats and barge lines can count on navigation the year thru over this magnificent inland waterway that can serve the whole country, if the Government will adopt this plan.

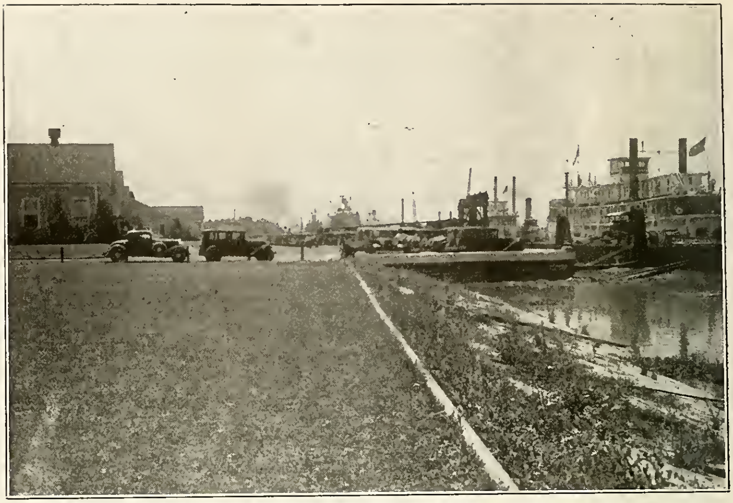
The plan is this: Stabilize the banks with concrete piles; fill in behind these piles with silt from the bottom of the river; protect the levees from wave wash in this way, and thereby make the banks, the levees, the roads and the yards, the

Cement wall made of concrete posts on the Claiborne Canal looking north from the bridge leading out of New Orleans where Claiborne Avenue joins the State highway. These concrete posts are about eighteen inches in width and give an idea of what might be done to stabilize the caving banks along the Mississippi River. The levee is back of this wall. (Picture taken May 29, 1933.)

buildings and the trees, etc., along the river permanent.

Instead of building new levees every ten or fifteen years, make the levees bigger and the security greater. Build the roads on top of such levees, if you will. Then let the steamboats and barge lines go up and down the river at all its stages, with the benefit of wharves and safe landing places provided for this commerce wherever the piles are necessary.

This proposition was put up to our United States Senators and they submitted it to the War Department. The report came back that the plan was fine in theory, but impractical because of the huge expense involved. It was said that each pile would cost $1000.00 to build and drive it.



View of the top of the levee at Carrollton Avenue looking east towards Walnut Street. The photo was taken from the east end of the four-hole golf field, itself on top of the levee, and shows the government buildings and parking space for more than one hundred automobiles, with roads, buildings, etc., and all on top of the levee. A club house is at the west end of the golf course and is not shown in the picture. (Picture taken May 29, 1933.)

The error in this answer lies in the belief that the plan involves building this concrete wall every foot of the way, say from Red River Landing to New Orleans.

Nothing could be further from the true facts. Caving banks usually occur after every sharp turn in the river. The water rushes into the opposite bank a mile or so after the river makes a sharp turn, eats the bank away, and a cave results. Then a new levee has to be built, moved back from where the old levee stood. The most conspicuous place where this has happened is at Plaquemine, in Iberville Parish, Louisiana, where in fifty years three city blocks, say one thousand feet, have gone into the river, the town's most valuable property has been lost and right now the Government locks that cost millions of dollars are threatened.

In 1915, during the high-water, there was a funeral at St. Raphael's cemetery in Iberville Parish. The body was brought up to St. Gabriel on the Mississippi Valley train and crossed over the river at St. Raphael's. The river stood against the levee and to its top, and this levee was within one hundred feet from the grave that had been dug for this burial; and the grave was as dry as a chip. At Plaquemine, on the same side of the river, seven miles West with the cemetery, a mile from the river at a funeral a week earlier, the grave could not be bailed out and the coffin had to be lowered into the water.

The pressure at Plaquemine from the river is against the front of the town; at St. Raphael's it is against the St. Gabriel bank on the opposite side of the river; hence, the difference in the conditions that were found when these two graves were dug.

Applying the concrete facts to the stabilization of the banks, we have this plain conclusion that is inevitable: The concrete piles will only have to be used where the pressure is great because of a sharp bend in the river. At Plaquemine, for instance, one thousand piles, each eighteen inches wide, would be required. Admit, for sake of argument, that each pile will cost $1000.00 to put it in place; then what?

The Government will have spent a million dollars to stabilize this bank. It can then develop the levee to any width and size because it will be permanent. And then it can take care of other points in the same way.

In addition to the element of absolute safety, the point buttressed in this way becomes a permanent wharf and harbor; navigation on the river becomes an all-year affair for every year; and the Government is always ready with its concrete piles to fight dangerous places along the river, *from the riverside,* whenever a crevasse threatens.

There probably are not twenty points between Baton Rouge and New Orleans that would have to be buttressed in this way. As a matter of fact there have been six crevasses on the Mississippi River, both banks, in the last fifty years in this area. The cost of the work would be negligible compared to the present haphazard, insecure, expensive, and destructive system.

It is worth trying and Plaquemine, Iberville Parish, Louisiana, where the Government has a huge investment in the locks would be the proper place to try the project out.

This is conservation in its most extensive and comprehensive field.

Intimate Glimpses of the Mississippi River Thru 50 Years of Life On Its Banks

July 31, 1883, a brother of mine, Rene by name, drowned in the river at Point Pleasant on the west bank, 7 miles below the town of Plaquemine. A number of us were swimming in charge of an elder brother. Rene was caught in an eddy and carried beyond his depth. He was 12 years of age and only learning to swim. The older brother in charge went to his rescue, but it was to no avail. For 72 hours dynamite was exploded and expert divers went down at and below the place where the boy disappeared. Then the body came to the surface fully 100 feet further upstream than the place where it disappeared.

◆

There is an immense batture at Point Pleasant, and part of it in front of the St. Raphael church property and in front of our home just below the church property was surrounded by a levee about 5 feet high. St. Raphael was once a parish church seat and the presbytery was on the batture surrounded by this levee. In 1882 the water flowed over this levee for the first time, and has continued to do so ever since; in fact, today there is not a trace of this levee to be found. The deposit from each succeeding overflow has finally covered this old levee entirely.

◆

Iberville and West Baton Rouge are adjoining parishes and meet on the river at a place near Sardine Point. From the Mayflower Plantation in Iberville Parish to the Eliza Plantation in West Baton Rouge it is about 2 and a half miles, but it is said to be 15 miles around the bend. Australia, Eliza and Medora Plantations, major sugar plantations, a smaller place called the Bank place, and a settlement at Sardine Point are included in this area of about 8000 acres. The Government has abandoned the levee around the point, and has built a levee across the cut-off from Mayflower to Eliza Plantations. The idea is, presumably, to let the water overflow these 8000 acres in case of high water such as we had in 1927. The owners have been paid the assessed valuation of their properties. But the experience at Point Pleasant warns us of what will happen at Sardine Point after the water is permitted to overflow this area a few times. The sand will pile up and the water accommodated will not make a great deal of difference.

◆

In the late 1880's when I was a boy I attended a political rally at Brusly Landing in West Baton Rouge in the interest of the candidacy of Col. S. M. Robertson for re-election to congress. My father was one of the speakers and I had gone with him to the meeting. The place of the meeting was out in front of the village in an old two story building fully two blocks further in front than the present levee. Colonel Robertson stated in his speech that he was born at Brusly Landing at a place then far out in the river and he said that he supposed he could claim his birthplace in any parish from West Baton Rouge to the mouth of the river as the sight of his birthplace had caved into the river and probably become attached to every parish in the lower stretches.

◆

When I began to go to church Bayou Goula had become the seat of the Parish from a church standpoint. The Catholic church was almost half a mile from the river and back of it was the cemetery. Many notables were buried there, including Governor Paul O. Hebert, who died in the early 1880's. His tomb was in the center of the cemetery and on it was the coat of arms of West Point for Governor Hebert was a Westpointer. When this cemetery was destroyed by the encroachments of the river a few years back, the tomb and remains of Governor Hebert were moved to the St. Raphael cemetery at Point Pleasant. Most of the bodies interred at Bayou Goula were left in the ground and are under the levee or back of it.

◆

Work of building the locks at Plaquemine, Iberville Parish, was begun in 1894. I can remember that Capt. Chas. A. Brusly and Mr. Jacob McWilliams, two of the older residents, predicted that the time would come when these locks would cave into the river as other front property had done. In these old times the best part of the town was where the river now flows. Gradually the river has eaten the old city away. The best buildings, places of business and homes were out there, as was the city hotel, and the first saw mill ever

(Continued on Page 25)

Larto Lake, An Old Mississippi River Channel*

By

RICHARD JOEL RUSSELL, Ph. D.,
Professor of Geography, School of Geology, Louisiana State University

IN Louisiana the Mississippi Valley varies in width from about 10 miles, near the northern boundary of the State, to about 50 miles at its southernmost points of confinement, near Franklin on the west and Spanish Lake (near Bayou Manchac) on the east. North of Red River it is bounded westward by Bayou Macon Hills and other upland features such as Sicily, Big, and Coles Islands. Here the width in Louisiana is almost everywhere less than 30 miles. South of the Red the average valley width increases by about 10 miles. Southward, after passing its valley walls, it spreads both eastward and westward and merges indeterminately with coastal marshes between Pearl River and Vermilion Bay. These relationships are shown in the index map, figure 1.

The uplands flanking the Mississippi Valley ordinarily present rather steep bluffs toward the alluvial lowland. These vary in height from a few feet to over 150 feet. Toward the coast and at many places upstream, particularly on the east, these bluffs are the margins of terraced sur-

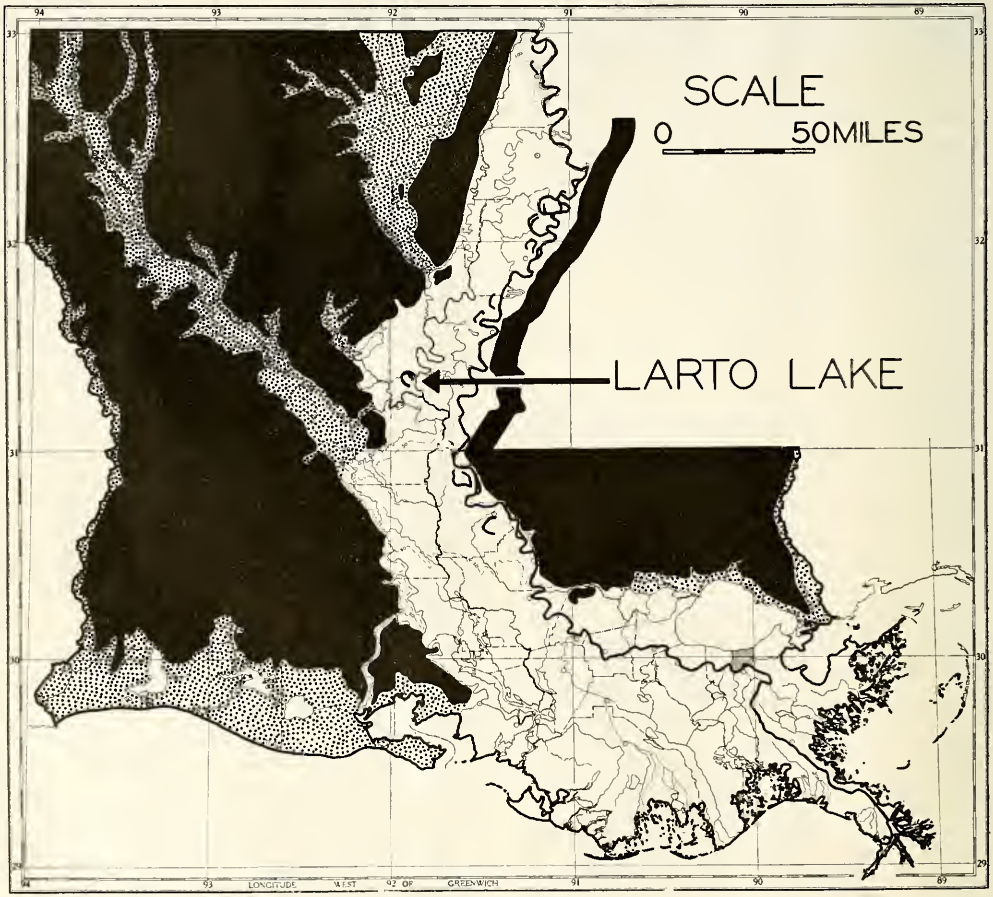


Figure 1.—Index map showing the Mississippi Valley and its associated coastal marshes (white), the valleys and associated marshes of other streams (dotted), upland features of Louisiana and their western edge in Mississippi (black), and the position of Larto Lake (arrow).

faces growing successively higher toward the north. In places they are capped by steep walls of loess. Farther inland consolidated bedrock forms rather extensive portions of the western valley wall.

The Mississippi channel varies in width from about one-third to almost one mile and winds in meandering fashion down the valley, showing today a distinct preference for its left, or eastern, side. Thalweg soundings taken by the Mississippi River Commission during the summer of 1932 indicate great irregularities in channel depth, increases occurring quite regularly toward the outcurves of bends and the downstream. Depths of as much as 193 feet were encountered near New Orleans and at a number of places north of Natchez the channel is over a hundred feet deep. Yet maximum depths of less than 70 feet occur a short distance west of New Orleans and of less than 20 feet at a number of places toward the northern boundary of the State.

Under natural conditions the Mississippi channel was free to migrate across the entire width of its valley and, in fact, did so. Today, with the River's eastward location such tributaries as the Red, Tensas, Black, and Ouachita hold sway over an unusually large proportion of the valley. In the very recent past, as geologists view time, conditions have been otherwise. Parts of the valley quite removed from the present channel still bear traces not only of alluvial soils deposited by the Mississippi, well-drained natural levees, but remnants of old channels as well. One of these of particular interest because of its size, shape, and location is Larto Lake in southernmost Catahoula Parish (figure 1).

A distinct relationship exists between the volume of water in a stream and the size of bends and meanders along its course, larger volumes being associated with larger bends. Typical portions of several Louisiana streams are shown in figure 2. The gigantic bends of the Mississippi stand in striking contrast to the modest sinuosities of the Red or Ouachita. In a straight line distance of about 56 miles along the Bossier-Caddo parish boundary the Red River makes some 55 distinct right or left bends whereas in a similar distance south from the Arkansas boundary in

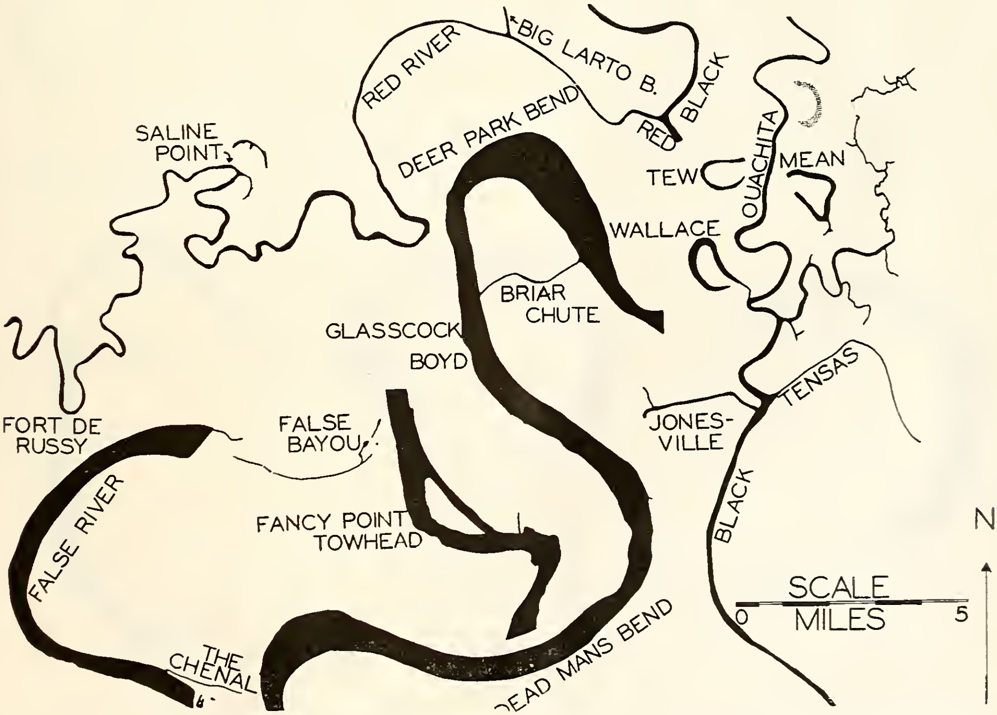


Figure 2—Typical portions of several Louisiana streams (all on same scale). In the center, Mississippi River between Jackson and Esperance points, Catahoula Parish. Lower left, False River, False Bayou, and the nearby Mississippi at Fancy Point Towhead, Point Coupee Parish. Upper left, Red River from above Norman Landing, Avoyelles Parish, to below Delhoste Landing, Concordia Parish. The abrupt change in pattern occurs where the Red enters an old channel of Black River. On the right, Ouachita River below Wardlaw Landing, Catahoula Parish, with portions of Tensas, Little, and Black rivers.

Louisiana the Mississippi makes but 14 to 18, depending on how the count is made at cut-offs.

If a restricted portion of a single bend is considered as an arc of a circle, the radius of such circle is smaller on a small bend, such as occurs on the Red River, than on a large bend, such as occurs on the Mississippi. It is customary among students of land and drainage forms to consider meanders and bends in terms of these radii of curvature. A given meander does not present the same radius of curvature at all points. From a straight reach, where the radius is infinite, there is a decrease toward each bend and in the case of a meander several changes in length take place downstream, the initial decrease just mentioned in many cases giving way to an increase (straighter) toward the outer point (apex), a decrease (sharper bend) below the apex, and, finally, an increase toward the next reach. The degree and rate of increases and decreases appears to depend chiefly on the volume of water in the channel. It is thus possible, as a result of detailed study, to determine the approximate size of a stream responsible for a given pattern of bends and meanders, even though the problem concerns a portion of a channel long detached from its parent course. On this basis it is readily apparent that Larto Lake is in fact part of a meander of the Mississippi River. Its arcuate form is compared, in figure 3, to that of Lake Bruin, formed about a century ago, and Old River at Homochitto Cut-off, formed in 1776, both of definite Mississippi channel origin. False River, Lake Concordia, Lake St. John, Lake St. Joseph, Palmyra Lake, Lake Providence, and a host of others along or near the present channel hardly bear more eloquent witness to their paternal origin, as old channels of the Father of Waters, than does Larto from the standpoint of size and shape. Only in location and historical record are their cases more definite. On the other hand, such recent Ouachita cut-offs as Tew Lake, Wallace Lake, or Mean Lake (see figure 2) exhibit curvatures exactly like those of the present Ouachita and former channels of the Red, such as Cane River, Bayou Boeuf, and Bayou des Glaises (from near Cottonport to Bordelonville) display meanders and bends exactly similar to those of corresponding portions of Red River. The anomalous huge bends of the Black and several other streams are in themselves an interesting story which will be reserved for a subsequent paper.

Streams building alluvial bottom lands, or flood plains, deposit sediment more rapidly on their immediate banks than farther out in their valleys. The growth of willows and other types of stream-side vegetation is a factor in trapping sediment but more important is the diminution of velocity as waters pass from channel across bank at times of flood. The gradual accretion of alluvium in time builds natural levees, strips of well-drained land along stream courses, important in Louisiana as being the most used agricultural land over nearly one-third of the State.

The backslope of a mature natural levee is steeper as streams are smaller and the width of territory between channel side and back swamp

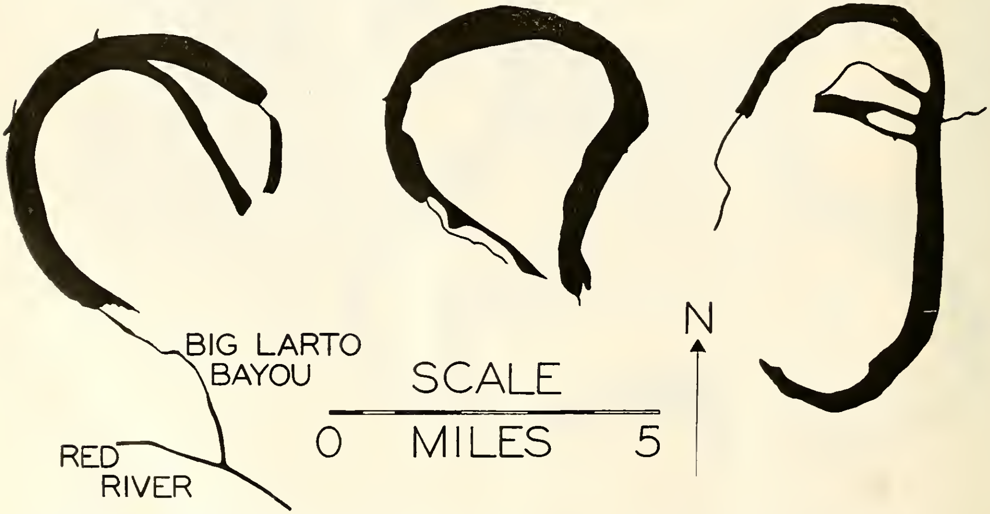


Figure 3.—Larto Lake (left), Lake Bruin, Tensas Parish, formed about a century ago, and Old River at Homochitto Cut-off, Wilkinson County, Mississippi, (right), formed in 1776.

is less. One of the most strikingly steep natural levees in the State has been formed by The Chenal on the southern side of Grand Bay, east of False River in Point Coupee Parish. The natural levees of the Mississippi, on the other hand, extend back much greater distances, two or three miles at many places, and slope gently, the entire drop involving a difference in elevation of such heights as 10 or 15 feet.

The natural levees of Larto Lake reveal its Mississippi origin. Directly east of Larto, between Deer Park and Dead Mans bends on the Mississippi, the elevations of natural levee crests for the most part lie 55 to 60 feet above mean gulf level. At the high point southwest of Briars Chute the elevation is 62.8 feet. Low points in Dismal Swamp, just to the west, have elevations of from less than 35 to about 40 feet. The width of the levee on the reach opposite Briars Chute, near Glasscock and Boyd Landing, is about two miles and the slope, neglecting steeper portions close to the bank, is about five to seven feet per mile. On such points as Glasscock Towhead, Fritz Island, and Jackson Point, all just east of Larto, there is a considerable area at approximately the maximum height of the natural levee. This is the natural result of meander-cutting advancing outwardly on the convex sides of bends, leaving behind a continuous deposit of inner-side levee fill. In the case of the point culminating in Glasscock Towhead, as shown on the Deer Park quadrangle of the Mississippi River Commission, the meander has migrated northwestward some three miles since 1829, leaving some 10 square miles of inner-side natural levee having scattered elevations in excess of 60 feet distributed throughout the entire area. Larto Lake presents a parallel case. On its inner side an area of some seven or eight square miles has scattered elevations of between 45 and 50 feet, the ordinary maximum height of the inner natural levee. In contrast to this relatively even and broad expanse the natural levee on the outer side of the lake slopes rather abruptly toward back swamps. This contrast is expressed today in the presence of about 30 habitations, a school, and post office on the "island" inner side of the bend but none across the way. The presence of palmetto, however, shows a considerable extent of land formerly cleared and under cultivation along the immediate crest of the outer natural levee.

Excepting the characteristic Mississippi River-type bifurcation at its eastern (upper) end, Larto Lake has a remarkably uniform width of approximately one-half mile. In this it exactly parallels the Mississippi due east along the reach near Glasscock and exceeds by a very slight amount the width of Old River, an abandoned channel dating from 1776 (see figures 2 and 3).

At low water the deeper portions of Larto Lake have rather uniform maximum depths of about 12 feet and the water surface stands at about 15 feet above gulf level. Near Boyd Landing, immediately eastward, the least maximum low-water depths of the Mississippi are about 28 feet and the water surface is something less than 15 feet above gulf level. When the accumulation of sediment since the abandonment of the Larto channel is considered we can not well avoid the conclusion that Larto must have been an active Mississippi channel in the not distant past, as geologists think of time. In recent years the deposition of sediment has been extraordinarily rapid. Largely as the result of the artificial barriers preventing Red River flood waters from flowing in greater quantity down their natural outlets into the Atchafalaya Basin an excessive amount of water is now forced northward along Big Larto Bayou into the lake and surrounding areas. These waters are heavily laden with silt and cause a wholly unnatural rate in sedimentation over much of the territory between Red River, Catahoula Lake, Little River, and Black River. The original bottom land forest of Saline Lake has been killed by the accumulation of Red River mud, Big Larto Bayou, according to the testimony of old residents, has been filled from a depth of some 30 feet to its present 12 or 15 feet, and the security of residents of the natural levees from annual floods has well nigh vanished.

The minimum straight-line distance from any point on Larto Lake to the nearest point on the present Mississippi is about 15 miles. Larto is not unique, however, in being an abandoned channel thus far removed from the existing master stream. Cocodrie and Black lakes, in Concordia Parish, are similar recent channels almost as remote. In common they preserve feature after feature exhibited by ox-bows of dated origin. The striking thing about them is their freshness, a degree of preservation that bespeaks a recency shocking to adherents to older conservative views concerning the origin of the lower Mississippi Valley. But even more astounding, in the light of what has just been said, is the record of events that have transpired since these channels were abandoned. Still later courses of the Mississippi have migrated across portions of the valley now well-removed from the present channel. New and complete levee systems have been built along these courses. Indeed the preservation of Larto Lake has chiefly been due to the protection from Mississippi sediment afforded by the levees of a chan-

(Continued on Page 46)

A School Class Attending Lecture Illustrated by Motion Picture of Louisiana's Natural Resources at the Department's Museum

Annual Report of the Bureau of Education Year 1932

By RICHARD B. OTERO, LL. D., Director

The purpose of the Bureau is to teach the youth of the State of Louisiana to appreciate and conserve its natural resources, and it is a matter of great satisfaction to the Bureau that its work during the past year has been carried on expertly and successfully; that the scope of its activities has been widened, and its usefulness augmented.

This progress is due to several causes, but mainly because of the increased interest of state teachers in Louisiana's rich natural endowment, the unusually large enrollment in the Nature Guardian Club, and certainly because of the enthusiasm and untiring energy of the Bureau's personnel in carrying out the carefully planned yearly program.

This plan embraces the lecture work, the Nature Guardian activities, the constantly increasing display and exposition of Louisiana's forests and fauna, the moving picture service, the distribution of literature, the revision and compilation of bulletins, the accumulation of new material for publication, and the clipping service.

There is nothing spectacular about these activities and perhaps only those engaged in educational work realize its steady advancement; but the result of this policy is beginning to be noticed in the quickened response to all measures for better conservation.

Everything that has been accomplished during the last year, has been done with a view toward making the Bureau function more efficiently in its services to the teachers and students of the State. Perhaps one of the most valuable features is the lecture work, at the Louisiana Conservation Museum of Natural Resources, at 237-39 Royal Street, which has a large and attractive auditorium where pupils from the various schools in New Orleans have met constantly during 1932 to hear discussions about birds, fur-bearing animals, forestry, alligators, turtles, fish, minerals and other subjects.

The teachers who accompany their classes are most appreciative, and one declared recently that a single visit to the Bureau's Museum was worth a month's lesson in nature study in the school room, and another stated that from the opening day of school in the fall the children began to clamor to visit the museum. They form an enthusiastic and delightful audience, and like the renowned Oliver, refuse to be satisfied and beg for "more," especially for more moving and talking pictures such as accompany the lectures. These moving pictures, both silent and talking, spread the wealth of Louisiana's natural resources before the amazed eyes of hundreds of college, high school and grammar school students last year. They were shown before boys' and girls' clubs, scout troops, civic, bird, and nature clubs, industrial and fraternal organizations, encampments, folks schools, and at fairs.

A BABY NATURE GUARDIAN

Explanatory lectures are given in conjunction with these pictures, and aid in stressing the reason and necessity for wise conservation laws.

As will be seen by the accompanying tabulations, during the past year many City principals have availed themselves of the opportunity to send their students to visit the museum. The Normal and High Schools have been well represented, and keen appreciation has been expressed by a certain member of the Easton High School faculty, who brings his boys regularly each term to add visual instruction to that of the class room. It is useless to say that the City and State educators heartily endorse the educational activities of the Bureau.

Trained lecturers were sent last year to many parishes in the State. These itineraries are carefully planned to enable the greatest number of public, parochial, and private schools, both white and colored, to be visited. On entering each parish a visit is paid to the school superintendent's office, where itineraries and time schedules are discussed and any changes are made that the superintendent may deem wise, in order to expedite the work and reach the greatest number of pupils. Frequently, last year, the superintendent accompanied the lecturer to the schools and gave a short preliminary talk, sponsoring the work.

Last year the lecturer carried a small exhibit of mounted birds, a collection of pelts of the State's most important furbearers and an assortment of literature dealing with Louisiana's conservation measures.

"A YOUTHFUL NATURE GUARDIAN"

During the spring of 1932, the Bureau sent a representative to Acadia, Allen, Beauregard, Calcasieu, Cameron, Jeff Davis, Vermilion, and Vernon parishes, where the teachers and pupils were found to be deeply interested in conservation problems, especially those affecting their own parishes.

During the fall the lecturer's itinerary included the schools of Ascension, East and West Feliciana, Jefferson, Livingston, Plaquemines, Pointe Coupee, St. Bernard, St. Charles, St. Helena, St. James, St. John, St. Tammany, Tangipahoa, and Washington parishes, where lectures were given, literature distributed, and Nature Guardian Clubs formed.

During June 1932, a representative of the Bureau instructed a group of boy scouts in nature study, bird study, and in conservation at Camp Ki-ro-li, near Monroe, Louisiana, following its policy of assisting such organizations in any way desired.

The Department's naturalists and taxidermists were constantly on the alert last year to obtain new specimens for the museum. Among the most valuable additions is the Ivory-billed Woodpecker, a bird that has not been reported since one was seen in Florida some years ago.

So important was the discovery of this bird in our state that Dr. T. Gilbert Pearson, President of the National Association of Audubon Societies, who has been searching for this bird since 1891, came to Louisiana immediately to see the living bird. A rare specimen of this nearly extinct species is to be seen displayed at the Museum.

Among other attractive specimens collected last year are four White Ibises, taken near New Iberia, and a Florida Wren which is uncommon in Louisiana. Two Wild Turkeys have been recently added. A Groove-billed Ani, or Jewbird has attracted much attention, and an albino Black-duck, truly a *rare avis*, has proven interesting to many visitors, especially if they are sportsmen.

This year a new impetus has been given to the Nature Guardian Club of Louisiana, wherein has been enrolled many new members, both in Orleans parish and in other parishes. An entirely new filing system has been evolved to care for the thousands of application cards that have come in during the last three years, and which provide a point of contact with the school, the teacher, the young Guardian, and the Bureau.

Last year many adults who are enthusiastic conservationists joined the Club, being enrolled from all over the United States as honorary members. One whole family from Pennsylvania was admitted last fall, upon stating that they were interested in guarding all natural resources and that they wanted to identify themselves with the Nature Guardian work.

Several times during the year the Bureau was asked to explain the purpose, scope, and plan of the organization by representative conservationists with a view of inaugurating a similar club in their own states. The purpose of the Club is to instill in children's minds a knowledge of their State's natural resources, an appreciation of their economic value, and a protective interest in the State's wild life.

The membership already includes many thousands. Each member signs a pledge to help conserve the resources of the State, wears proudly a beautiful lithographed bird button, and receives a handsome certificate, and informative literature about birds, animals, minerals, fish and forests.

In order to help the Club work and to keep it uniform in the schools, there have been issued a comprehensive "Nature Guardian handbook" and an "Outline for Nature Guardian Supervisors." The "Handbook" furnishes a plan by which a Louisiana bird, animal, fish, tree or flower, is to be studied each month that extends over two years, of eight school months each. The "Outline" contains all information for forming and conducting Nature Guardian Clubs, and is a great help to the teachers, supervisors, and Senior Guardians upon whom the success of the clubs depend.

The following summary tells concisely the great amount of work done by the lecture service and totals the number of students benefited thereby during the year 1932:

SUMMARY OF LECTURES AND FILM SERVICE FOR ENTIRE STATE FOR 1932

Lecture Service at Louisiana State Museum of Natural Resources, 237 Royal St., Orleans Parish for 1932

Total Schools represented at Lectures	24
Total Pupils Attending Lectures	1,319
Total Scouts Attending Lectures	130
Total Members Civic Organizations Attending Lectures	450

Lecture Service for Schools Outside Orleans Parish for 1932

Total Number Parishes Visited	28
Total Number of Schools Visited	194
Total Number Pupils Attending Lectures	57,735
Total Number Civic Clubs Attending Lecture	700

Summary for Entire State for 1932

Total Schools Represented	218
Total Pupils Attending Lectures	59,054
Total Scouts (City and Camp) Attending Lectures	180
Total Members Civic Clubs Attending Lectures	1,150
Total Attendance at Lectures	60,334

MISSISSIPPI FLOOD CONTROL

(Continued from Page 17)

built in Plaquemine, the Little Jim, erected and owned by Anton Wilbert, grandfather of the present generation of Wilberts in charge of the big saw mill interests of this concern at Plaquemine. Where the railroaod depot is now was considered to be back of town. The old court house, the Catholic church, the convent were four blocks from the river in 1880 and earlier. Today they are in the first block next to the river.

* * *

When I was assistant treasurer of the United States at New Orleans during the administration of President Theodore Roosevelt, we were visited by Mr. Charles Hallam Treat, treasurer of the United States, a New Yorker. He was on his way to San Francisco and merely stopped off en route. I had the honor of entertaining Mr. Treat and showed him various places of interest over the city. He expressed a desire to see the levee, he called it the dikes, along the Mississippi River. I conducted him to the top of the big levee where St. Charles and Carrollton Avenues meet. It was a windy, dark day and the river was within a few feet of the very top of the levee. The river was rough and the waves washed against the levee and rolled down stream making a noise and presenting a view that was all but reassuring to a stranger. On the land side of the levee were small homes only slightly taller than the levee. Mr. Treat swept this view of the river east and west and these small houses, and he said in amazement: "Mr. Hebert, you don't mean to tell me those people live and sleep in these houses with this raging flood passing on so near to them?" My answer was: "Why certainly they do, Mr. Treat; and they never worry about it. In fact they are safer than people who live off at a distance from the river. The land slopes back from the river and a break in the levee would have to occur near them to affect them at all." And Mr. Treat shook his head incredulously and sympathetically. He could not understand how people could be calm in a situation of such peril as this one appeared to him to be.

Conservation of Louisiana's Mineral Resources, 1906 to 1918

By CYRIL K. MORESI,*
Geologist Department of Conservation

INTRODUCTION

PRESIDENT Franklin D. Roosevelt's recently announced program of reforestation, as a means of dealing with unemployment and as a method of conserving certain of our natural resources, brings clearly to our attention one of the relatively new activities of the National Government. The movement for the conservation of natural resources has by no means a long history; it is, as a matter of fact, largely a product of the present century.

Nevertheless, within this comparatively short period, conservation activities have developed to such an extent that many natural resources not included in the early part of the conservation program, now have become important phases of conservation work. In view of this increase in the scope of conservation activities, this study will not attempt to give even a complete history of the conservation activities of Louisiana, but will deal especially with the history of Louisiana's efforts to conserve the mineral resources of the State. However, it is impossible to thoroughly understand the initiation of this movement without mentioning the forces which resulted in the national conservation movement.

PART I

NATIONAL CONSERVATION MOVEMENT

Until 1891, the National Government had taken no steps towards conservation. Previous to this date a strictly hands-off policy had been pursued. As one critic has suggested: "Our government policy has been simple,—to throw open the public lands to immediate settlement and encourage the settlers to exploit them to the full. As successful as this policy has been in our country the wealthiest of nations, it was appropriate only to the stage of colonization. The settlers regarded forests, rivers, and other physical features chiefly as obstacles to be removed or overcome and it was hard to realize their value in the future economic progress of the country; so the forests were cut away, the farms were planted year after year to the same crop without fertilizer, the coal and mineral deposits were exploited with prodigal waste. Labor was costly and natural resources cheap. To save the resources at the expense of labor would have been ruinous in the early settlement and development of our country, so that the main effort of our people has been to develop labor-saving machinery rather than the means of saving coal or timber or land or ore."[1]

In 1891 Congress took the first step towards conservation by authorizing the President to set aside and withhold from sale public lands covered wholly or in part with timber and undergrowth. This law, however, produced no radical changes immediately, for Harrison and McKinley were cautious in the exercise of the authority so conferred upon them and Cleveland instituted no revolutionary policies under the act. Not until President Theodore Roosevelt explored its terms were its latent powers fully realized. Roosevelt promulgated sweeping decrees, enlarging the forest reserve to a point where the national area withheld from sale embraced a hundred and fifty million acres, thus making conservation a national issue.[2]

In 1907 Congress reversed the order of events by declaring that no new reserves should be created without its express consent. Beard states that "had it not been for Roosevelt's spirited fight, the remnants of the public domain already reserved by executive action might have been thrown to the hungry accumulators at the portals."[3]

In spite of the attitude of Congress, President Roosevelt was determined to extend the national conservation policy. In this program he was aided by various national and state agencies. On October 4, 1907, he received a communication from the Inland Waterway Commission requesting that a conference be held on the general subject of the conservation of the natural resources of the Nation. The President, on receiving this formal request from the Commission, not only approved the plan but decided that he would call the conference himself. Later in the day he delivered an address at Memphis at which time he formally announced that he would call such a conference."[4]

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*The author wishes especially to thank Professor Taylor Cole, Associate Professor of Government, Louisiana State University, who suggested this study to the writer, and whose assistance in searching the literature has been invaluable. To Dr. R. Dana Russell, Mr. Edward Pugh Folse, and Miss Louise Lowe, of Louisiana State University, the writer wishes to express his gratitude for suggestions and assistance.

[1] Young, James T., *The American Government and its Work*, (New York, 1917), p. 260.

[2] Beard, Chas. A., and Mary R., *The Rise of American Civilization*, (New York, 1930), p. 575.

[3] *Ibid.*, p. 576.

EDITOR'S NOTE: *This article will be published in two installments. Part Two will appear in the October issue of this Review.*

In November of the same year President Roosevelt wrote each Governor, inviting him to take part in a conference on conservation, to be held in Washington on May 13, 14, and 15, 1908. Later in the year he issued invitations to organizations dealing with the natural resources, which were generally accepted. He also invited the Senators and Representatives of the Sixtieth Congress to be present at the session as far as their duties would permit.[5]

The opening session of this Conference of Governors was called to order at 11 o'clock a. m., May 13, 1908, and President Roosevelt delivered the opening address. A part of his address follows:[6]

"I welcome you to this Conference at the White House. You have come hither at my request, so that we may join together to consider the question of the conservation and use of the great fundamental sources of wealth of this Nation.

"So vital is this question, that for the first time in our history the chief executive officers of the States separately, and of the States together forming the Nation, have met to consider it. It is the chief material question that confronts us, second only—and second always—to the great fundamental questions of morality.

"With the governors come men from each State chosen for their special acquaintance with the terms of the problem that is before us. Among them are experts in natural resources and representatives of national organizations concerned in the development and use of these resources; the Senators and Representatives in Congress; the Supreme Court, the Cabinet, and the Inland Waterways Commission have likewise been invited to the Conference, which is therefore national in a peculiar sense.

"This Conference on the conservation of natural resources is in effect a meeting of the representatives of all the people of the United States called to consider the weightiest problem now before the Nation; and the occasion for the meeting lies in the fact that the natural resources of our country are in danger of exhaustion if we permit the old wasteful methods of exploiting them longer to continue.

"We can not do any of these things without foresight, and we can not, when the nation becomes fully civilized and very rich, continue to be civilized and rich unless the nation shows more foresight than we are showing at this moment as a nation.

"In Washington's time anthracite coal was known only as a useless black stone; and the great fields of bituminous coal were undiscovered. As steam was unknown, the use of coal for power production was undreamed of. Water was practically the only source of power, save the labor of men and animals; and this power was used only in the most primitive fashion. But a few small iron deposits had been found in this country, and the use of iron by our countrymen was very small. Wood was practically the only fuel, and what lumber was sawed was consumed locally, while the forests were regarded chiefly as obstructions to settlement and cultivation. The man who cut down a tree was held to have conferred a service upon his fellows.

"Since then our knowledge and use of the resources of the present territory of the United States have increased a hundred-fold. Indeed, the growth of this Nation by leaps and bounds makes one of the most striking and important chapters in the history of the world. Its growth has been due to the rapid development, and alas that it should be said! to the rapid destruction, of our natural resources. Nature has supplied to us in the United States, and still supplies to us, more kinds of resources in a more lavish degree than has ever been the case at any other time or with any other people. Our position in the world has been attained by the extent and thoroughness of the control we have achieved over nature; but we are more, and not less, dependent upon what she furnishes than at any previous time of history since the days of primitive man.

"The Constitution of the United States thus grew in large part out of the necessity for united action in the wise use of one of our natural resources. The wise use of all of our natural resources, which are our national resources as well, is the great material question of today. I have asked you to come together now because the enormous consumption of these resources, and the threat of imminent exhaustion of some of them, due to reckless and wasteful use, once calls for common effort, common action.

"We want to take action that will prevent the advent of a woodless age, and defer as long as possible the advent of an ironless age.

"The natural resources I have enumerated can be divided into two sharply distinguished classes accordingly as they are or are not capable of renewal. Mines if used must necessarily be exhausted. The minerals do not and can not renew themselves. Therefore in dealing with the coal, the oil, the gas, the iron, the metals generally, all that we can do is to try to see that they are wisely used. The exhaustion is certain to come in time. We can trust that it will be deferred long enough to enable the extraordinarily inventive genius of our people to devise means and methods for more or less adequately replacing what is lost; but the exhaustion is sure to come.

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[4] *Proceedings of the Conference of Governors of the United States,* (1909), p. IX.

[5] *Ibid.,* p. X.

[6] *Ibid.,* pp. 3 ff.

"Finally, let us remember that the conservation of our natural resources, though the gravest problem of today, is yet but part of another and greater problem to which this Nation is not yet awake, but to which it will awake in time, and with which it must hereafter grapple if it is to live—the problem of national efficiency, the patriotic duty of insuring the safety and continuance of the Nation. When the People of the United States consciously undertake to raise themselves as citizens, and the Nation and the States in their several spheres, to the highest pitch of excellence in private, State, and national life, and to do this because it is the first of all the duties of true patriotism, then and not till then the future of this Nation, in quality and in time, will be assured."

President Roosevelt in this address called attention to the words of Justice Holmes, in a recent decision which had been handed down by the Supreme Court of the United States, to the effect that, "the State as quasi sovereign and representative of the interest of the public has a standing in court to protect the atmosphere, the water, and the forest within its territory, irrespective of the assent or dissent of the private owners of the land most immediately concerned . . . "[7]

Andrew Carnegie contributed much to this Conference. Mr. Carnegie presented a paper entitled, "The Conservation of Ores and Related Minerals," in which he urged that the Executives of the Federal and State Governments make a thorough study of the natural resources of the Nation. Mr. Carnegie insisted that, "if our career of prosperity is to continue, it must be on the basis of completer control of national sources of material and power than we have thus far exercised, a control to be gained only by research."[8]

From an address given by I. C. White, State Geologist of West Virginia, entitled "The Waste of Our Fuel Resources," I quote the following: "This Conference will not have met in vain if it shall result in awakening public sentiment to the period which overshadows the Republic in this uncontrolled waste and dissipation of our fuel resources. These eminent Governors whom you have summoned to hear this narrative of rapine and devastation . . . owe you a debt of gratitude which they can only adequately repay by arousing the citizens in their respective States to such a realization of the gravity of the dangers which follow in the wake of unbridled waste that whatever is possible for legislation to accomplish may be speedily enacted into law . . ."[9]

The delegates to this Conference from the State of Louisiana were Governor Newton C. Blanchard, Honorable E. H. Farrar, New Orleans, Thomas J. Kernan, Baton Rouge, and John M. Parker, New Orleans. Governor Blanchard as Chairman of the Committee on Resolutions contributed much to the success of the Conference. On the morning of May 15, the closing day of the Conference, Governor Blanchard submitted a declaration of views and recommendations of the Committee which were endorsed by the Conference. The concluding paragraph of this declaration is as follows: "We recommend the enactment of laws looking to the prevention of waste in mining and extraction of coal, oil, gas, and other minerals with a view to their wise conservation for the use of the People, and to the protection of human life in the mines. Let us conserve the foundations of our prosperity."[10]

The immediate results of the Conference of Governors was the creation of a National Conservation Commission by President Roosevelt on June 8, 1908. The Commission was organized in four sections to consider the following four great classes; water resources, forest resources, resources of the land, and mineral resources. Among the appointments to this Commission were Ex-Governor Newton C. Blanchard and Joseph E. Ransdall of Louisiana.[11]

The results of the investigations of the National Conservation Commission were presented at a joint Conservation Conference composed of Representatives of the States, of the great national organizations, and members of the National Conservation Commission, which was held in Washington, December 8, 9, and 10, 1908. The delegates attending this Conference from the State of Louisiana were: Ex-Governor Newton C. Blanchard; Governor Jared Y. Sanders; Joseph E. Ransdall; Henry E. Hardtner, Chairman, Louisiana Commission on Natural Resources; Harry P. Gamble, Secretary, Louisiana Commission on Natural Resources; and Major Frank M. Kerr, member of the Louisiana Commission on Natural Resources.[11a] Ex-Governor Newton C. Blanchard, then a member of the National Conservation Commission, submitted the report of the Commission to the Conference.[12] The reports on the four great classes of natural resources were given by the Secretary of each section. J. H. Holmes, Secretary of the Section of Minerals, stated in his report that "all unscientific and inefficient use of resources is waste; and the most

(Continued on Page 33)

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[7] *Ibid.*, p. 12.

[8] *Ibid.*, p. 24.

[9] *Ibid.*, p. 36.

[10] *Ibid.*, p. 194.

[11] *Report of the National Conservation Commission*, (Washington, 1909), p. 116.

[11a] The Louisiana Commission on Natural Resources was created during the meeting of the State Legislature in the summer of 1908.

[12] *Report of the National Conservation Commission*, (Washington, 1909), p. 28.

Annual Report of Fur and Wild Life Division

Year 1932

By ARMAND P. DASPIT,
Director

We have always held Louisiana's great wild life refuges as a sacred trust. Since Commissioner Robert S. Maestri has taken office more improvements have been placed on these properties than by all other Commissioners combined since they have been under the supervision of this Department.

As stated in our previous report several fine keepers' camps have been erected; ditches have been dug from one end of the property to the other, thereby making all portions of the property more accessible for patrolling; observation towers have been erected, and the property thoroughly posted.

In addition to the above, deep wells have been dug which pour a vast amount of fresh water in the marshes. This water provides an abundance of delicious plant food for wild life.

This year we have erected some seventeen or eighteen modern trappers' camps which have proven a great boon to the trappers and their families. These buildings are approximately 16'x40' divided and sub-divided, into various rooms. They are properly sealed, lined and screened and are very warm and comfortable.

The fur production on these properties is continually increasing and it is therefore necessary for us to diligently trap them. Whatever revenue we derive from the sale of these pelts is used exclusively for the preservation of wild life on these preserves.

We have bought two new boats and repaired all of the old ones so that our patrolling facilities are just about as complete as they can possibly be.

So anxious has the present administration been to improve, if possible, wild life food conditions on the State's refuges that it has undertaken, through its Biological Division, headed by Dr. Nelson Gowanloch and Mr. John Mizelle, to make a complete study and survey of conditions on these preserves with a view of supplying the necessary food plants in the event any are lacking. It is our intention to make an exhaustive study of both the botanical and biological survey with a view of bettering conditions.

Public Shooting Ground

The Pass-a-L'Outre Club, as usual, has supplied an abundance of game to people in this section of the state.

We have had a great many visitors at our club this year and with very few exceptions the limit was secured. In fact all good hunters secured the limit.

Licensed Hunting Clubs in Louisiana 1931-1932 Season

Pass-a-L'Outre Club, Pilot Town, La. (Charlie Johnson, Mgr., Pilot Town, La.)
Newlight Hunting Club, Homer, La. (B. F. Green, Sec., Lisbon, La.)
Willswood Duck Hunting Preserve, Waggaman, La. (E. C. Gaines, Mgr., 1907 American Bank Building, New Orleans, La.)
Delta Duck Club, Pilot Town, La. (C. Sag Harris, Mgr., 1001 Maison Blanche Building, New Orleans, La.)
Savanne Neuvelle Hunting Club, Inc. (T. L. Freeman, Secretary-Treasurer).
Lake Charles, La. (Lake Charles, La.)
Burnside Hunting Club, Burnside, La. (W. J. Waguespack, Sec.-Treas., Burnside, La.)
Manchac Hunting Club, Manchac, La. (A. G. Coats, Sec., 822 Poydras St., N. O., La.)
Venice Hunting Club, Venice, La. (Peter J. Buras, Sec.-Treas., Venice, La.)
The Coastal Club, DeRidder, La. (E. W. Brown, Sec., DeRidder, La.)
Galva Hunting Club, Manchac, La. (R. Roberts, Sec., Southport, La.)
The Hunting & Fishing Club, Lake Charles, La.
Crowley, Louisiana Club, Crowley, La. (P. L. Lawrence, Pres., Crowley, La.)
F. S. Dufrene Hunting Club, Des Allemands, La. (F. S. Dufrene, Mgr., Des Allemands, La.)
S. J. Simoneaux Hunting Club, Des Allemands, La. (S. J. Simoneaux, Mgr., Des Allemands, La.)
The Rigolets Club, Rigolets, La. (E. P. Hernandez, Sec., c/o Canal Bk. & Tr. Co., Camp and Gravier Sts., New Orleans, La.)
Little Lake Club, Barataria, La. (Jas. A. Stouse, Sec.-Treas., 226 Hibernia Bldg., New Orleans, La.)
Orange Cameron Land Co., Orange, Texas. (Geo. W. Raborn, Mgr., Orange, Texas.)
Florence Club, Gueydan, La. (E. A. Arpin, Mgr., Gueydan, La.)
Faulk Hunting Club, Cameron, La.
Holly Beach Hunting Club, Cameron, La.
J. O. Hebert Hunting Club, Cameron, La. (J. O. Hebert, Mgr., Cameron, La.)
Bill Broussard Hunting Club, Lake Arthur, La. (Bill Broussard, Mgr., Lake Arthur, La.)
E. L. Pratt Hunting Club, Lake Arthur, La. (E. L. Pratt, Mgr., Lake Arthur, La.)

Because of the shortened duck season only twenty-three hunting clubs operated in Louisiana in 1931-1932. Ducks were more numerous than in the past and for this reason a longer season is recommended for 1932-1933.

We are listing below the reports of the above named clubs:

HUNTING REPORT OF LICENSED HUNTING CLUBS
SEASON 1931-1932

NAME OF CLUB	Licensed Hunters	Greenhead Mallard	Northern Blk. Mallard	Summer Mallard	Gadwall or Gray Duck	Widgeon or Baldpate	Green-winged Teal	Blue-winged Teal	Spoonbill	Pintail	Redhead	Canvasback	Scaup or "Dos-gris"	Ringneck or "Blk. Duck"	Bufflehead "Butterball"	Coot or "Poul D'eau"	Snipe	Woodcock	Snow Goose	Blue Goose	White-fronted Goose	Canada Goose	Deer	Squirrels	Rabbits	Miscellaneous	Total Ducks
Lake Charles H. & F. Club	17	420					25	17		57			20														539
Willswood Duck Hunting Pre.	69	17	16		21		28	31		3		5	129	727		32	2		1								1009
Manchac Hunting Club	6																						17				
Venice Hunting Club	71	1194		20	244	37	40	24	122	342	5	16	18	47		2	50			236		39					2111
Galva Hunting Club	14	3	10	15	8			1		42													10	8	60		79
Savanne Neuville H. C.	17	240			130	4	15	33	2	60		3	5	19													511
Florence Club	10	669		5	8	51	7			216	1	4	37	238													1236
Orange Cameron Hunting	33	233			270	8	85	6	51	154		14						6	83	39		11					827
The Coastal Club	91	2553		6	15	67	48	33	7	247	1	16							3	15	1	22					2993
Little Lake Club	31	253	257	55	103	81	148	148	37	201	6	10	683	62													2043
F. S. Dufrene	86	52						4				15	1325	507		4											1907
Delta Duck Club	92	1296			749	333	51		222	634	35	593	288	501						210					4		4702
The Rigolets Club										No Report to Make																	
Burnside Hunting Club	14																						44				
Holly Beach Hunting Club																				90						296	296
Bill Broussard	15	242	144	51	6	4	27	23	2	201																	700
E. L. Pratt Hunting Club	53	1155																									1155
Simoneaux Hunting Club	119	7	14				1	1		2		2	180	2875	24	746	12			2							3852
Pass-a-l'Loutre Hunting Club			32	432	148	55	264		747	125		8	207							34							2018
Newlight Hunting Club	12																						3	11			
Faulk Hunting Club		772																		1							772
J. O. Hebert Hunting Club										No Report																	
Crowley, La. Club		746												54													800

Ducks	27,550
Geese	786
Deer	74
Squirrel	19
Rabbits	64

BIRD BANDING

A very interesting research of recent years into the habits of our wild birds has been that of Bird Banding.

Louisiana is the winter resort for a large number of migratory game birds and for this reason our State can furnish reliable information concerning bird flight.

The Department of Conservation has cooperated with the Biological Survey in forwarding to Washington bands taken from birds secured in this state. Frequently a hunter will kill a bird bearing on one leg a small aluminum band bearing a serial number and the words "Biological Survey." When such a band is sent to this office, it is in turn mailed to Washington. The number on the band is looked up in the records and the place and date of banding is ascertained and the bander as well as the taker is notified by card.

Below will be found a record of some of the banded birds that were killed in Louisiana:

Dave Pellegrin, Houma, La., on November 16, 1932, killed two "Dos Gris" in Bayou Chevreniel (near Lake Mechant) bearing bands Nos. B-657686 and B-657891.

These birds were banded by: Mr. E. A. McIlhenny, Avery Island, La., November 14/32.

Bobbet Gaspard, 1420 N. Johnson St., New Orleans, La., November 23/32, killed one Coot at Lake Catherine bearing No. B-687897.

This bird was banded by: Mr. Frank Hopkins at Campbellsport, Wis., October 27/32.

John McCormack, Vinton, La., November 7/32, killed one Red-Winged Black Bird on farm of D. Bourgeois near Vinton bearing No. 459998.

This bird was banded by: Mr. A. R. Shearer, Mont. Belvieu, Tex., February 4/28.

Mr. Winston Nolan of New Orleans, La., August 29, 1932, killed one Immature Laughing Gull, at Milneburg, La., bearing band No. A-525048.

This bird was banded by: Mr. Frank M. Carroll at Isle au Pitre, La., on June 12/32.

Mr. Maurice Naquin, Jean Charles Island, La., May, 1932, killed one "Dos Gris," Jean Charles Island, La., bearing band No. B-631141.

This bird was banded by: Mr. E. A. McIlhenny, at Avery Island, La., on December 19/32.

Mr. Emile Colwart of Houma, La., December 11/32, killed one Coot in Lake Theriot, bearing band No. A-604966.

This bird was banded by: Mr. E. A. McIlhenny, Avery Island, La., on February 26/31.

Mr. Theodore Cheramie, Spanish Pass, Plaquemines Parish, La., February, 1932, killed one Black Mallard in open season, bearing band No. 702996.

This bird was banded by: Mr. Frank E. Swartz, Milford, Michigan, during February, 1932.

Mr Armand Sylveste, St. Martinville, La., January, 1932, killed one Goose, open season, bearing band No. 100770.

This bird was banded by: Mr. W. F. Kubicheck, Webster, S. D., June 15/31.

Mr. H. G. Stelz, 2623 Sage St., New Orleans, La., December 6/31, killed one duck at Golden Meadow, La., bearing band No. A-514314.

This bird was banded by: Mr. G. Baker at Bemidji, Minn., during December, 1931.

Mr. Louis Cabiran, New Orleans, La., on November 29, 1931, killed one female Pintail at Pass-a-l'Loutre, La., bearing band No. 654654.

This bird was banded by: Mr. F. W. Robl at Ellinwood, Kan., March 6/31.

Mr. G. R. Chauvin, Cocodri Bayou, November, 1931, killed a Cormorant near Cocodri Bayou, bearing band No. A-711046.

This bird was banded by: Mr. A. R. Lundquist, at Webster, S. D., June 22/31.

Mr. John S. Hollbrook, New Iberia, La., February, 1931, killed one Duck in Bayou Teche, Iberia Parish, La., bearing band No. A-666488.

This bird was banded by: Mr. E. A. McIlhenny at Avery Island, La., February 6/31.

Mr. Justin Theriot, Agt., Lafourche, La., January 12/31, killed two Black Ducks in Lake Boeuf, La., bearing band Nos. 689344 and 689469.

These birds were banded by: Supt. R. D. Gordon at Rainey Refuge, near Abbeville, La.

Mr. Will Hays, Calhoun, La., January, 1931, killed a Blackbird bearing band No. 507574.

This bird was banded by: Mr. Wm. I. Lyon at Door County, Wis., July, 1926.

Mr. Admis Cuvillier, Lake Arthur, La., December 1/30, killed one Duck bearing band No. 377982.

This bird was banded by: Mr. Wm. I. Lyon, July, 1926, Door County, Wis.

Mr. Edwin Bourg, Houma, La., November 26/32, killed one Black Duck in Lake Long, Lafourche Parish, bearing band No. B-649625.

This bird was banded by: Mr. Richard Gordon at Abbeville, La., February 21/32.

TAXIDERMISTS REPORT

Our taxidermists have been very active in collecting and mounting specimens for our Exhibit located at 237 Royal Street, New Orleans, Louisiana, which is one of the best in the country.

Below will be found a list of the numbers and kinds of birds and animals that have been mounted in the past year:

1 American Bittern
6 Brown Thrashers
1 Broad Winged Hawk
1 Blue Winged Duck
1 Blue Grosbeak
3 Blue Winged Teal
2 Blue Birds
1 Black-billed Cuckoo
1 Butcher Bird
2 Blue Jays
2 Barred Owls
2 Bald Eagles
1 Baldpate
4 Cardinals
1 Cow Bird
1 Clapper Rail
1 Cooper-hawk
2 Crows
1 Canada Goose
2 Carolina Wrens
7 Coots
1 Crested Flycatcher
1 Chestnut-sided Warbler
1 English Sparrow
1 Egret
1 Forster Tern
1 Florida Red Shouldered Hawk
4 Flickers
1 Florida Grackle
1 Fish Crow
5 Florida Galinules
1 Field Sparrow
1 Gadwall
1 Green-winged Teal
1 Gray-horn Owl
1 Grove-billed Ani
2 Hermit Thrush

1 Ivory-billed Woodpecker
2 Lesser Scaup
6 Laughing Gulls
1 Least Tern
1 Little Blue Heron
3 Louisiana Herons
2 Myrtle Warblers
1 Marsh Hawk
4 Meadow Larks
1 Magnolia Warbler
2 Maryland Yellow Throats
1 Mockingbird
2 Owls
1 Pine Warbler
1 Pileated Woodpecker
1 Pintail
1 Pigeon Hawk
10 Red Winged Blackbirds
2 Ruby Crowned Kinglets
1 Royal Tern
2 Red Shouldered Hawks
2 Red Bellied Woodpeckers
1 Rose-breasted Grosbeak
2 Ring-billed Gulls
3 Swamp Sparrows
2 Savannah Sparrows
5 Sparrow Hawks
2 Spoonbills
1 Summer Tanager
1 Snowy Egret
3 Towhees
2 Turkeys
1 Virginia Rail
1 Woodcock
1 Wilson Snipe
1 Wood Duck
1 White Vireo
4 White Ibises
1 Whip-poor-will
1 Yellow-crowned Night Heron
1 Yellow-billed Cuckoo
1 Yellow-billed Sapsucker

ANIMALS

1 Whole Deer
1 Raccoon
2 Mink
1 Gray Squirrel
1 Wild Cat
1 Wolf
10 Deer Heads
7 Muskrats
1 Rabbit
1 Fox Squirrel
2 Beavers
1 Otter

FISH AND SNAKES

1 Needle-nose Gar
1 King Snake
1 Spreading Adder
1 Calico Bass
1 Sturgeon
1 Banded Water Snake
1 Six Foot Tarpon
1 Coral Snake
1 Cotton-mouthed Moccasin
1 Sand or Horned Lizard
1 Ladyfish
1 Rattle Snake Skeleton

FUR REPORT FOR THE 1931-1932 SEASON

Fur conditions as a whole have not been satisfactory. The drouths have diminished the take and the depression has reduced the price.

We are listing below the take of the fur animals in the 1931-1932 season:

Muskrats	2,209,382
Opossums	197,712
Raccoons	133,470
Minks	127,245
Otters	1,664
Skunks	111,280
Civet Cats	11,399
Wild Cats	1,140
Foxes	1,821
Wolves	12
Miscellaneous Pelts	144
Total	2,795,269

ALLIGATORS

5 Feet and Under	4,014
10 Feet and Under	1,810
Total	5,824

NEW BIRD IS DISCOVERED IN LOUISIANA

A rapid, yet comprehensive, survey of the astonishingly populous island bird colonies of Louisiana has just been completed and among the many valuable results secured are the addition to the State bird fauna of a completely new species and the establishment of a breeding record for another species hitherto unreported as nesting in Louisiana.

The party, consisting of Dr. Harry Church Oberholser, senior ornithologist of the Bureau of Biological Survey, Dr. William L. Tower and James Nelson Gowanloch, Chief Biologist of the Bureau of Research, Department of Conservation, left New Orleans on June 2nd and conducted ornithological studies in a wide sweep over the barrier islands and shell reefs of the Louisiana coast from Grassy Island, Lake Borgne, through Mississippi Sound, Chandeleur Sound, Breton Sound, around the mouth of the Mississippi and westward as far as Timbalier Bay. Abundant and interesting information concerning Louisiana bird life has been brought to light by this expedition.

Dr. Oberholser discovered, at Goosier Island near Breton Island, a single specimen of the Bridled or Brown-winged Tern, *Sterna anaethetus melanoptera* Swainson. This species, first discovered in western Africa, is known to breed from the Bahamas and the West Indies to British Honduras and Venezuela. Never before has it been recorded for Louisiana.

The new breeding record for the State is that of the Eastern Sooty Tern, *Sterna fuscata fuscata* Linnaeus, a species that breeds in the Bahamas, the West Indies, the tropical islands of the Atlantic to Venezuela and on the Dry Tortugas. A single nest was found. Dr. Tower and J. N. Gowanloch secured a full photographic record of the activities of the birds which were, when the observations had been completed, collected for museum purposes.

This survey, productive of very substantial results in added information concerning our bird life, is but part of the Department of Conservation's wide and active program for the extension of our knowledge of the natural resources of Louisiana.

"GRAND ECORE"

By Rosalie Barnes Huson

If you've never been to Grand Ecore,
That's surely a place you ought to go,
For while all that's there is a great big bluff,
As the name implies, that's quite enough
To satisfy an artist true,
For indeed it presents a wonderful view,
With its lovely trees of oak and pine,
And the sheep that graze there, from time to time.

Overlooking Red River, for many a mile
You can see the country around, and while
Your gaze is wandering with many a glance,
The atmosphere breathes the word, "Romance."
But no wonder, for back in the days of old,
An Indian Princess, so the story is told,
Leaped to her death, from the bluff above,
Because the man of her heart, spurned her love.

Then many years later, when all the land
Was claimed and settled, mostly by the man
Who was white in color, a home was built
Upon this big old bluff, and if
You've any imagination at all,
Let your thoughts wander so you'll recall
The pictures of homes of olden times,
Surely this one was lovely, among the pines.

Then when in the year of '61,
The war over slavery was begun,
On Grand Ecore bluff, a battle was staged,
That changed the plans the North had made.
Even now, on the bluff, you can easily tell
Where the skirmish took place, and you might find a shell
For a souvenir as you wander about,
For they have been found there without a doubt.

But best of all from these days of yore,
Is the lovely view, at Grand Ecore;
For that in itself, is quite enough
To help you enjoy this big old bluff.
There among moss covered oaks, and pines,
You certainly can have the loveliest times.
If therefore you'd like a place to go
For enjoyment and pleasure, then choose Grand Ecore.

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LOUISIANA'S MINERAL RESOURCES

(Continued from Page 29)

important element in conservation is the fact that the necessary waste of today, through inquiry or research or through economic conditions, becomes the avoidable waste of tomorrow."[13]

As a result of the National Conservation Conference in 1908, the nations of North America, including representatives of the United States, Mexico, Canada, and Newfoundland, held a Conference in Washington on February 23, 1909. The significance of the movement for the conservation of natural resources was apparent. The suggestion of this international conference, that all nations should be invited to join together on the subject of world resources and their inventory, conservation, and wise utilization, was submitted to the President of the United States.[14]

After a brief revulsion from the Roosevelt policies, national conservation had become an increasingly important phase of the National Government. With respect to the development of minerals on public lands, Congress, during Taft's administration, provided for the separation of the surface from the sub-surface and reserved to the government the ownership of minerals. The development of the mineral resources thus reserved was made possible by the action of Congress in 1920, when it authorized the leasing of millions of acres of coal, oil and phosphate lands to private parties for development on a rental basis.[15]

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[13] *Ibid.*, p. 110.
[14] *Senate Doc.* No. 742, 60th Cong., 2nd Sess., p. 6.
[15] Beard, *op. cit.*, p. 577.

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TARPON AND TARPON RODEOS

(Continued from Page 13)

capped by very bad weather, and only one fish was caught. Hugh Wilkinson secured this prize. The 1930 Rodeo was not held due to high water preventing the opening of the Harvey locks through which most of the boats pass enroute to Grand Isle. Six Tarpon were caught during the next year's contest. L. H. Perez, Hu B. Myers, Jr., and Dr. R. L. Dodd took the prizes.

Most of the Rodeo Tarpon are caught by trolling with a spoon, but each year some are caught by still fishing with mullet used for bait. Mr. Henry E. Belden of New Orleans, made the discovery by sheer accident during a fishing trip, that they strike more readily when the spoon is trolled near the boat. On the occasion he had been trolling for sometime at the usual distance from the boat with no result. He started to reel in his line and received a strike within twenty feet of the boat. Shortly afterward he received another strike at the same distance. Trolling at this distance Mr. Belden landed three Tarpon and received seven strikes before he left the field.

The greatest Tarpon fishing record in Louisiana was not made during a Rodeo. On August 22, 1929, Mr. Leo A. Marrero, of Marrero, Louisiana, hooked and landed five Tarpon within five hours. All of these were over six feet long. There are many incidents which occur during the Rodeos beside the catching of Tarpon which together with this, will in time make the occasion truly a sport classic of our Louisiana coast. The writer had the great pleasure of being present at the 1932 Grand Isle Rodeo, an account of which follows:

By late afternoon of Wednesday, August 24th, nearly all boats intending to participate in the Rodeo had dropped anchor or tied up in the near vicinity of Barataria Pass and Bayou Rigaud. There were all types. Rather clumsy looking luggers, small high-speed launches, graceful yachts and others dotted the surrounding waters. Their occupants spent the late afternoon in testing and preparing fishing tackle, giving outboard motors the "once-over" and similar preparations for the competition beginning at sunrise the next morning. Occasionally another boat would arrive. This would give rise to a great blowing of sirens, horns and whistles as she was welcomed by those already on the grounds.

Sunrise, on the 25th, was greeted by the roaring of outboard motors, trolling over the Barataria Pass waters. Several strikes were had during the morning, but no Tarpon were landed. R. J. Howell played one for quite a while, but his line finally parted after becoming frayed by scraping against the fish's scales or fins, leaving the spoon in its mouth. Howell stated that he thought the line had become wrapped around the long dorsal fin ray. A very serious and painful accident occurred a while later when Eugene Chalin's spoon became entangled with this line trailing behind the Tarpon. Chalin played the fish for some time and finally reeled in. In the excitement which followed when his spoon appeared with still more line trailing behind it he caught hold of the spoon. The Tarpon gave a sudden leap and the hook was driven deep into Chalin's hand. Luckily, the frayed line parted at that point or he would certainly have been dragged overboard and probably drowned. He was quickly taken to Dr. F. A. Burgis' boat, the "Barbara Ann," where it was necessary to cut the hook from his hand.

Leo A. Marrero brought the first Tarpon to gaff about the middle of the afternoon. Immediately he was saluted by all of the horns, whistles and sirens in the fleet as he triumphantly headed for the flagship, the "Adco" to have his prize weighed and measured and to properly celebrate the occasion. Each time a Tarpon was caught this was repeated. During the next two days nine altogether were brought to gaff. About sixteen boats and thirty fisherman participated. John Donovan received the prize for the largest fish, and Dr. Burgis received the prize for the greatest number and also for the second largest. Donovan's prize weighed one hundred pounds and was six feet long. Burgis brought two Tarpon to gaff. Hugh Wilkinson also caught two, but they were not as large as those caught by Dr. Burgis.

In remembering the three days and nights, many things stand out vividly in the observer's mind. Luggers, skiffs, speed-boats and launches cris-crossing each other's paths, sun-tanned sportsmen, stripped to the waist, struggling to hold their rods against the leaps of the Tarpon, blowing whistles and sirens, and then after nightfall, the lights twinkling across the broad expanse of the Pass, and the sound of men's laughter and the tinkling of glasses floating from boat to boat —all blend into a very pleasant recollection.

Interstate Trust & Banking Company

Main Office: Canal at Camp St. and **Carondelet Office:** 222 Carondelet St.

NEW ORLEANS, LA.

Department of Conservation to Receive Valuable Land

By JAMES NELSON GOWANLOCH,
Chief Biologist, Bureau of Research and Statistics,
Department of Conservation

THE people of the State of Louisiana are acquiring an unusually valuable 1,000 acre area of land, as an addition to the public game lands. A complicated chain of events, including a shift in the path that shipping takes from New Orleans to the sea and the ceaseless, and here beneficent activities of that Father of Waters, the Mississippi, all have conspired to provide this valuable acquisition.

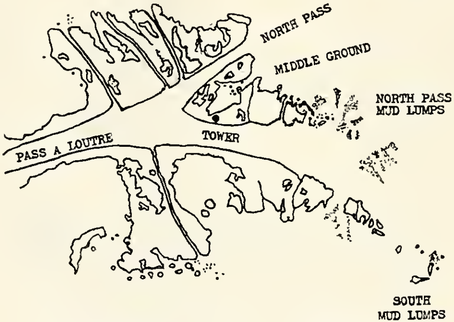
Seventy-eight years ago the Lighthouse Service of the Federal Government, acquired from the State of Louisiana a tract of land known on the charts as Middle Ground and thereon established a Lighthouse reservation. "Middle Ground" is an island located in the mouth of Pass-a-Loutre where the waters of the Pass flow somewhat north of east to enter the Gulf of Mexico. Here the Federal Government erected a lighthouse whose beacon, fifty-nine feet above the level of the sea, served as guide for the then important traffic that traversed this entrance to the Mississippi River. A lighthouse tower of brick, sturdily built to withstand the violence of occasional storms, and a substantial two-story house constructed of cypress,—these were among the several buildings that came to constitute the lighthouse station. With the passage of time and as a result of river control activities the path of sea-borne commerce from the river into the Gulf became changed and Pass-a-Loutre, no longer a highway for larger vessels, served chiefly for the small craft of trappers and fishermen. Ceaselessly the river continued its work of building more and more to the eastward the stretches of low lying land whose substance, torn from the soil of many states, the Mississippi River bears annually seaward in almost incredible volume. Thus the land which the State once gave to the Lighthouse Service continued to grow so that when recently it was a decision of that service to abandon this light, the area once donated by the State had, in half a century, greatly increased in size. Negotiations between Governor O. K. Allen and the Lighthouse Service, participated in by Colonel Robert S. Maestri, Commissioner of Conservation, will bring about the gift of this area to the Department of Conservation, together with the entire establishment constructed thereon.

The buildings of the Lighthouse Reservation, Middle Ground Island, Pass-a-l'outre. The Research Vessel, "Black Mallard" is shown in the foreground moored at the wharf.

Representing the Department of Conservation, Colonel Hu B. Myers, the Director of the Bureau of Research, and the writer conducted a recent survey of the area to ascertain its value to the Department of Conservation and its relation with other areas now belonging to that Department. Proceeding on the research boat, "Black Mallard," the party examined not only the island itself, but in addition investigated the interesting adjacent "mud lumps" which form the breeding home of many thousands of eastern brown pelicans. The present brief account will therefore first discuss the property newly to be acquired and in the second place will relate some of the facts concerning the mud lumps and their inhabitants.

"Middle Ground," or as it is sometimes called, "Light House Island," is roughly triangular in shape and between eight hundred and one thousand acres in area. The apex of the triangle is directed up-stream, dividing the water channel into a narrower northern portion, designated on the chart as North Pass, and a broader southern portion to which apparently only the general name of Pass-a-Loutre is applied. It is on this southern channel that the lighthouse is established at a point about one-quarter of the total island length from the up-stream apex of Middle Ground. It is also off this wider channel that the conspicuous and remarkable mud lumps have been formed. Pass-a-Loutre and its continuation, the just described broader southern channel, form the northern boundary of the splendid public hunting grounds created and maintained by the Department of Conservation. Concerning these lands more will be stated later. The new area is thus enhanced in its value to the Department of Conservation because it is adjacent to the extensive hunting grounds already under the careful administration of the Department. The buildings composing the lighthouse establishment consist of a solidly built lighthouse tower some sixty feet in height, a two-story frame house, substantially built of cypress, two smaller outhouses and an additional frame building located a short distance away formerly sheltered the radio beacon. In addition there are a sturdily built wharf and a boat house.

Middle Ground itself is typical delta land providing a perfect habitat for water fowl—shelter in summer for breeding species, and a winter home for those ducks and geese that spend that season with us. The value to the State of this strategically located area now to be acquired cannot easily be estimated.



Sketch of Middle Ground or Lighthouse Island

The Louisiana Public Hunting Grounds

The Public Hunting Grounds of Louisiana and the Public Hunting Club thereon established by the Department of Conservation constitute a pioneer achievement in North America in making available to the citizens of any state those game resources which are the property of the people. Initiated by Act No. 52 of 1921, introduced into the legislature by the late Mr. John Dymond, the public hunting ground was first set aside. Improvements carried out by the present administration of the Department of Conservation have made the public hunting grounds uniquely satisfactory. Set in an area of 66,000 acres (not including the area of Middle Ground described above) a modern clubhouse offers to the hunter a most satisfactory home during his hunt. The whole project makes available at moderate cost and under excellent conditions, the splendid privilege of hunting water fowl in Louisiana. Administered by the Division of Wild Life under the directorship of Mr. Armand Daspit, the lands of the public hunting ground are under constant care and improvement so that adequate ponds, connecting channels and appropriate shelter are maintained. The experience of carrying out a duck hunt under these circumstances is full of thrill and accomplishment.

Called long before dawn, the hunter awakens to a world that is starlit, and for the south, cold. After a hasty breakfast, he leaves in a motor boat and is transported through mile after mile of sluggish water channel to, at last, that narrow water path that gives access to his particular hunting pond for the day. Here he enters his Dan Kidney duck boat and is expertly conveyed by his guide to a blind properly constructed and properly situated in the pond itself. The guide has brought the correct complement of decoys and by the time that he has anchored each of these with its mooring of cane pressed deeply into the mud, the night has already begun to gray. To the heart of the hunter, few things are more pleasant than the stillness and expectancy of that brief time preceding dawn when the first stir of the marsh birds and of the ducks is heard. Presently comes sunrise and with it the first whistling wings of ducks on the move. Canvasbacks, teal, pintail, butterballs and mallard (known locally as French ducks), all may pay a visit within a few minutes and if conditions be at their best, it will only be by selecting his birds sparingly that the hunter can stretch his bag limit far into the morning. When the hunt is ended the hunter is again transported to the clubhouse where his game is skillfully cared for. No hunting whatever is permitted during the afternoon and evenings so that the game is thus given adequate time to feed and rest. It is not possible to convey in any few words the excitement and thrill that are the hunter's portion when concealed in his blind and alert for ducks, he suddenly sees passing low above him an orderly and clamorous procession of wild geese.

The Public Hunting Club, maintained by the Department of Conservation, affords, at a nominal cost, the opportunity for a thrilling and memorable hunt to the citizens of this or of any other state.

The Mississippi "Mud Lumps"

The mud lumps are strange formations of a still somewhat obscure character. They are the result, evidently, of an upward eruption of masses of sediment due, apparently, to the development of unequal pressures in the vast volume of silt deposited by the flow of the Mississippi. Similar mud lumps are formed in the delta areas of other great river systems whose conditions of flow and sediment transport resemble those of the Mississippi. Sometimes the eruption of these mud lumps is violent, the mass being suddenly forced upward above the surface of the sea. Invaded by vegetation, such mud lumps become islands of a characteristic and odd appearance. It is typical of these formations, also, that frequently an irregular flow of marsh gases may be observed to occur on them, associated with a slow spring-like stream of water. The mud lumps off Pass-a-Loutre are ten in number and afford a breeding place for great numbers of pelicans. When visited, April 21st, the mud lumps nearest the shore showed pelican nests containing either eggs or young newly-hatched while the offshore lumps contained colonies of half-grown young. When the writer again visited these mud lumps on June 7th, in company with Dr. Harry Church Oberholser, Chief Ornithologist of the Federal Government, and Dr. Wm. L. Tower, it was found that few nests contained young yet incapable of walking about while over the mud lumps there roved large companies of young pelicans, many of them the equal of their parents in size.

The mud lumps off Pass-a-Loutre constitute one of the several important breeding places for pelicans in the State, the other two most important in the eastern half of the State being North Island in Chandeleur Sound and Belle Pass Island near Timbalier. Each of these three populous breeding areas affords different conditions for the colonies.

The mud lumps with their sparse vegetation provide no nesting places other than the ground and here the pelicans construct their nests in surprisingly close proximity with each other. The grotesque antics of these solemn looking birds are exceedingly amusing, especially when, in the absence of the householder, a pelican will, with an amusing mixture of stealth and gravity, proceed to appropriate the nesting materials of a neighbor. The behavior of the birds on the wing while coming in with the long "canes" in their mouths provides an interesting spectacle since their naturally rather clumsy take-offs and landings are much further complicated by the awkward load they carry. When the young have grown sufficiently so that they can walk around, they form white droves that move angrily over the island in front of any intruder, turning constantly with raucous notes and threatening plunges of their open bills. Further in their excitement they will frequently and without any embarrassment regurgitate their dinner at your feet. The sudden appearance of a large-sized menhaden, fresh as if from the sea, is especially surprising since the fishes are unexpectedly large.

A visit made to the mud lumps June 7th revealed the presence of laughing gulls, royal terns, black skimmers and Forster terns as additional breeding species on the mud lumps. Dr. Oberholser estimated that 4,550 pelicans were breeding on four mud lumps. About half of these birds were young. In addition, on two other mud lumps he noted 13 laughing gull nests and a total of 550 royal tern nests. On one mud lump 103 Forster tern nests were noted while on another mud lump a small colony of ten nests of black skimmers was found. On one of the mud lumps inhabited by royal terns were found 25 deserted eggs of the Cabot tern. No adult Cabot terns were noted.

The most startling impression that one carries away after a visit to these strange formations, the mud lumps, is the memory of the hundreds of adult pelicans circling in the air, their ungainly flight suggesting what the observer would imagine was once the flight of pterodactyls. Utterly voiceless and silent, in sharp contrast to the constant uproar of their young, the adult pelicans swing protestingly over the observer's head.

Middle Ground Island with its haven for water fowl and the adjacent mud lumps with their colo-

(Continued on Page 47)

Eastern Brown Pelicans at Their Nesting Colony On One of the Mud Lumps Off Pass-a-Loutre

Record of the Emergency Congress---Largest Peace-time Outlay in History

Unprecedented Amount of Important Legislation Enacted, Touching Every Phase of Nation's Economic Life

THE largest peace-time authorizations of expenditures in the history of Congress, and unusual cooperation of the majority and minority in enacting a unprecedented volume of important legislation characterized the session of Congress just ended.

Leaders of the majority and the minority agreed on this view as the special session closed June 15.

"Considering the large number of very important bills that were passed during the special session," Representative Snell (Rep.), of Potsdam, N. Y., minority leader in the House, said, "there was as much unanimity in the House as possibly could be expected." He added that the minority disagreed with some features of the legislation, but that there had been no disposition to block entirely any Administration measure, since all were specially interested in doing what they could to end the economic emergency.

"It was the most remarkable Congress in history," according to Representative Byrns (Dem.), of Nashville, Tenn. "Controlled inflation has been used, to the best of my knowledge for the first time, in raising prices; and both parties have cooperated in passing measures which have ended industrial chaos and promise to put 5,000,000 unemployed back at work. Congress as a whole has made a 100 per cent record in passing helpful legislation."

The two leaders disagreed on the subject of the budget, Mr. Byrns declaring that a balance had been attained, while Mr. Snell contended that the balance is not actual but only "on paper."

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APPROPRIATIONS

Actual appropriations by the special session were large, but they set no new high mark, records of Congress show. However, large expenditures reaching several billions of dollars—were authorized which are not provided for by appropriation. These include the $2,000,000,000 home mortgage refinancing plan, involving a bond issue by a Government-sponsored corporation, and the farm mortgage measure, operating on a similar basis and also authorizing an issue of $2,000,000,000 of bonds.

Included in the record of expenditures provided for at the session is the largest peace-time appropriation bill in history. This is the fourth deficiency bill, containing, in addition to other items, $3,300,000,000 to finance the public works program embodied in the industrial recovery bill. The total carried is $3,610,000,000.

The independent offices bill, around which centered the struggle to eliminate some of the reductions in veterans' compensation made by the President, carried an appropriation of $631,802,546 to meet expenses of numerous independent boards and other agencies of the Government. The annual District of Columbia appropriation bill and the third deficiency bill carried comparatively small amounts.

A fund of $100,000,000 was appropriated in the agricultural adjustment act to aid the Secretary of Agriculture in putting the farm relief program into effect.

The Reconstruction Finance Corporation was directed to make available to the States $500,000,000 in grants for relief of the unemployed.

A revolving fund of $120,000,000 was set up in the Farm Credit Administration for loans to farmers. The fund is to come largely from unexpended balances of previous appropriations.

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BANKING

The emergency banking act, adopted when most of the Nation's banks were closed, empowered the President to regulate reopenings in the best interests of the country. Under the law, most of the banks have been reopened.

The Glass-Steagall Act, passed in the last days of the session, provides for comprehensive regulation of banking in the United States. It separates strictly banking operations from securities dealing, requiring that companies in the two fields be kept separate. It provides for a system of deposit insurance, and tends to establish a unified banking system for the Nation.

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FINANCE

The agricultural adjustment act empowered the President to expand credit and currency by large amounts. Anticipation of inflation under these powers is credited with having raised the price level materially.

A resolution was adopted abrogating the gold clause in contracts. This followed the actual abandonment of the gold standard by the United States.

Regulation of issues of securities, to require the making public of full information regarding the assets behind the securities and the persons involved in the issues, was provided in the securities act. Penalties were provided for failure to make such information public and for false statements.

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MORTGAGES

A corporation was provided for to refinance urban home mortgages through issues of bonds up to $2,000,000,000, the interest on the bonds guaranteed by the Government. The bonds are to be exchanged for mortgages which are in distress. Capital of $200,000,000 was provided for the corporation, to be used largely in cash refinancing of home mortgages.

The Farm Credit Administration, operating through the Federal land banks, also was authorized to issue $2,000,000,000 of bonds to refinance farm mortgages. Provision was made also for cash loans on farms under certain conditions, but exchange of bonds for mortgages was to be the principal method of refinancing in this case also.

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TAXATION

Legalization of beer and the imposition of a tax of $5 a barrel is estimated to yield about $125,000,000 a year. Some additional revenue is being received from beer license fees.

The industrial recovery act provides for new taxes to raise about $227,000,000 of revenue. These include an increase of one-half cent a gallon in the tax on gasoline, a capital stock tax, a tax on dividends, and changes in administrative provisions of the revenue laws which are estimated to increase the yield.

The tax on electricity was amended to make it apply to the producing companies rather than to consumers of current.

The Secretary of Agriculture is empowered under the farm relief law to levy processing taxes on basic farm products. The levies may reach high percentages of the market price, depending on the difference between current prices and the pre-war parity price. Funds from these taxes are to be used to finance retirement of acreage from production and a reduction in output of dairy products and pork if deemed necessary.

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GOVERNMENT ECONOMIES

The economy act authorizes the President to reduce the compensation paid to war veterans and the pay of Federal employes. This power was exercised. It led to a change in the independent offices bill restoring about $160,000,000 of the reduction which had been made in veterans' benefits.

Authority to reorganize Government agencies was conferred on the President. Under this power, farm credit agencies have been centralized and certain other changes made in the Federal organization, each of which is designed to effect savings.

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INDUSTRY

The industrial recovery act is the major legislation affecting industry directly. It provides for regulation of industry through either voluntary or compulsory codes of fair competition, trade agreements, or labor agreements, all subject to Presidential supervision. These agreements would be exempt from the anti-trust laws. Power to license all concerns in an industry was granted as a measure of forcing compliance with the requirements when an industry proves recalcitrant.

In addition, a $3,300,000,000 program of public works was set up to start industry toward recovery from the depression. This program, together with the effects of regulations relating to minimum wages, minimum prices, hours of labor, and curtailment of production, is designed to stimulate purchasing power and to keep industry advancing once a start has been made.

Numerous other measures have indirect effects on industry. The beer act had as an objective the stimulation of industry, as did employment measures, relief grants, the Muscle Shoals project, and other laws.

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EMPLOYMENT AND RELIEF

One of the chief objectives of the industrial recovery act is to provide employment. In addition, legislation was enacted to meet the most pressing needs of the unemployed by putting

250,000 men to work in reforestation camps, to be employed by the Government. This conservation work is believed to have taken a heavy load off local relief agencies.

A national employment agency was set up through the Wagner Act providing for cooperative Federal-State employment offices. A fund of $500,000,000 was set aside for grants to the States for direct relief.

The general farm relief bill was designed to raise the purchasing power of the farmer, giving a stimulus to industry which might result in increased employment.

Additional employment is provided through the Tennessee Valley development project, including the Muscle Shoals plant. Construction of a dam is included in the development, and the entire region is to be developed.

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AGRICULTURE

The general farm relief law provides for reduction in the production of surplus commodities through payments to farmers for cutting their output. Funds for the purpose are to come largely from processing taxes on farm products.

Trade agreements among producers and distributors were authorized in the act with the objective of giving the farmer a larger return for his products.

Refinancing of farm mortgages, already referred to, was provided up to a maximum of $2,000,000,000. This is designed to lift part of the burden of debt that has been oppressing agriculture.

A revolving fund of $120,000,000 was established for emergency loans to farmers for crop and livestock production. All farm credit agencies were centralized in the Farm Credit Administration.

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TARIFF

The President is empowered to raise tariffs and to declare embargoes on imports when operation of the price-raising features of the industrial recovery and inflation legislation are jeopardized by foreign goods.

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RAILROADS

Relief for the railroads was attempted through a law providing for a coordinator of transportation, who is to assist the roads in effecting economies and eliminating duplication of facilities and services. He is to encourage also such reorganizations as can be effected that will cut down the fixed charges of the roads. The entire transportation system eventually would be coordinated under the plan.

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GENERAL

There were 6,558 bills and resolutions introduced in the House during the session, and 2,019 in the Senate. Of these, 44 Senate bills and 33 House bills passed both Houses, and four Senate joint resolutions and six House joint resolutions also passed.

A total of 272 civilian nominations were transmitted to the Senate. None of them were postmasters. There were also 519 Army nominations, 431 to the Navy, and 34 to the Marine Corps. Two nominations were withdrawn, and one was not confirmed before adjournment.

During the session, the Senate conducted the impeachment trial of Judge Harold Louderback, judge of the District Court for the Northern District of California. This resulted in acquittal.

An investigation was made by the Senate into the stock exchanges, including the banking transactions of J. P. Morgan & Company. The inquiry resulted in certain changes in the administrative provisions of the revenue laws.

An investigation was made also into a purchase of kits for the conservation corps established under legislation to relieve unemployment. The investigators reported finding no wrong-doing.

Bankruptcy bills designed to assist corporations and municipalities which are in financial distress were considered but failed of enactment.

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Louisiana Nature Guardians

"Upon my honor, as a Louisiana Nature Guardian, I promise to take care of all our natural friends, to guard and protect them to the best of my ability, and as far as possible influence others to do the same."

ESTELLE VERJIE COTTMAN, *Editor*

WHEN the Nature Guardian Club of Louisiana was formed several years ago, it met an instant and hearty response from the teachers and the school children all over the State. From a small interested group it has grown steadily into a mighty force of thousands of young conservationists. These children are the proud possessors of handsome lithographed badges, and certificates of membership. New Clubs are being formed each week and it is the purpose of the Educational Bureau to enroll every Louisiana boy and girl, white or colored, under the Nature Guardian banner.

HOW YOU CAN BECOME A NATURE GUARDIAN

YOUR PART

Consult your teacher.

Ask that the purpose and plans of the Nature Guardian Club be explained to you and the class.

Ask for an application card.

Get a responsible person to indorse it, after proving that you fully understand the duties of a Nature Guardian.

Sign the application and mail the card postpaid, or give to your teacher, to send with cards from all the class.

OUR PART

We send the application card.

We send you a handsome badge, a certificate of membership, Nature Guardian pamphlets, and other literature.

This is all free, and is carried on with the purpose of instilling in the children's minds a knowledge of Louisiana's wild life and a thorough understanding of its economic value to the State.

It also aims to develop individual humanitarianism. Even within this short time an amazing improvement has been made in the mental attitude of our young folks toward the conservation and protection of Louisiana's natural resources.

EDITORIAL

MY DEAR GUARDIANS:

I wonder how many of our members are amateur gardeners? So many flower and shrub enthusiasts sigh for material to plant, and forget about or ignore the lovely wild shrubs that take so kindly to new homes!

It is rather early to think about transplanting red bud, dogwood, holly, cassine, wild honeysuckle and other beautiful shrubs, but they can be located now and marked in some manner, so that they may be easily identified at the fall planting time when, without their leaves or blooms, they are not so easily recognized.

It is well to make a map of your garden, indicating just where you want certain plants to be placed; defects can be noted and the planting arranged so as to hide or disguise them.

Landscape artists have a way of massing foliage near the house, especially at the corners, leaving the lawn bare except for green grass; they no longer cut it into flower beds shaped like the sun and moon and stars, but let the flower beds, if any, follow the outline of the yard itself.

The planting should not be tall enough, near the windows, to shut out light and air; vines may be used to overrun unsightly places, but should not be allowed to grow directly on the house, but trained on trellises and arbors. Trees of tall growth may be planted at certain selected places. Sometimes it is well to use a long-lived tree, though slow growing, in company with a rapidly-growing short-lived tree; when one is gone the other will be ready to take its place.

It is easy to get wild ferns in spring to plant in moist spots; if the broken leaves are cut off, and they are planted in a shady place, they will thrive happily.

An important thing to remember, Guardians, in using wild plants is that the work must be done under supervision. You may enlist the aid of the Boy Scouts, the Nature Guardian leader, or one of those well trained and efficient forestry rangers or assistant rangers who are always glad to help.

The shrubs can be obtained from the neighboring woods, banks of streams, nearby thickets, or from open fields. If they are healthy stock, and are taken at the right time, are not too large, and are planted correctly, (attention being paid to soil, moisture, disposal of roots, etc.), there is no reason why they should not grow and flourish; however, they should not be neglected, but should be protected from injury, pruned when necessary, and cultivated to keep free from weeds, to retain moisture, and to keep the soil in good condition. BUT on no account should you attempt to gather wild shrubs for planting without the approval and direction of some authorized person, who will give you advice and help largely in making your venture a success.

If carefully done, your yard will be as beautiful as though you had paid a great deal of money for the plants. The keynote of a charming and successful garden is the care that is given to it, and the neatness with which it is maintained.

With love for all the Guardians.

Yours for beautiful gardens,
THE EDITOR.

Here is a letter of appreciation of our lecture service and natural resources exhibit. It is always pleasant to know that the pupils and teachers are grateful for our efforts in their behalf:

Audubon School, N. O.

Dear Editor:

I am writing to thank the Bureau of Education for our nice trip to the State Museum of Natural Resources on Royal street.

I have told many people to take care of the little birds. I am very glad to know that Louisiana has the most furs.

We are all so glad to join the Nature Guardian Club.

Your friend,
MARY A. AHRENS.

It is a fine thing when brothers belong to the same club and work together to protect Louisiana's natural gifts:

Route 7, Gonsales, La.

Dear Editor:

I like my brother's certificate and pin so much that I want them, too. I want to join the Club and do all I can to help guard our Natural Resources.

I am eight years old.

Your friend,
BENSON CAPPER WILLIAMS.

Our membership is increasing very rapidly! Every day brings to our desk letters like the following:

Jonesboro, La.

Dear Editor:

Enclosed are the application blanks of my class. We have organized our Club, and have begun our work. Please send us the badges and certificates.

Very truly yours,
(Miss) R. V. CLAYTON.

We are glad, indeed, to welcome Miss Clayton's class into our Club.

Dear Editor:

What a happy girl Rita Lee must be! How many Guardians can swim, row, and play tennis? We know Rita Lee will make a faithful and loyal Guardian. Let us have a longer poem next time, please:

1226 Royal St., N. O., La.

I am a young girl fifteen years old. I am extremely interested in your Nature Club, and would like very much to become a member. I indulge in all sports, but like hiking, swimming, boating and tennis the best. I am wild about country life and am a lover of animals and birds. At present I am making a collection of pictures of birds and animals.

Please send me the cards and other necessities to join. I would also like to receive Nature Guardians pamphlets and other literature.

I have been receiving Conservation Review for ten months and I feel that I understand fully your purpose and work. I will be anxiously awaiting your reply.

"Away back here and out of spite,
I write my whole name within sight."

RITA LEE SCALLAN,
1226 Royal St.,
New Orleans, La.

Here is an interesting poem sent by a Windywood camper, who is an ardent Nature Guardian:

OUR FRIEND IN THE GARDEN

He is not John, the gardener,
And yet, the whole day long
He makes himself quite useful
The flower beds among.

He is not Tom, the pussy cat,
And yet, the other day,
With stealthy tread and glistening eye
He crept upon his prey.

He is not Dash, the dear old dog,
And yet, perhaps, if you
Took pains with him and petted him
You'd come to love him, too.

He's not a blackbird, tho he chirps
And tho he once was black,
Right now he wears a loose gray coat
All wrinkled on the back.

He has a very dirty face,
And very shiny eyes.
He sometimes sits beside our door,
And looks—and p'r' aps is—wise.

But in a sunny flower bed,
He has his fixed abode;
He eats the things that eat my plants,
He is a friendly TOAD.

THE CARDINAL BIRD

When snowdrifts are deepest, he frolicks along,
A flicker of crimson, a chirrup of song,
My cardinal bird of the frost-powdered wing,
Composing new lyrics to whistle in spring.

A plump little prelate, the park is his church;
The pulpit he loves is a cliff-sheltered birch;
And there, in his rubicund livery dressed,
Arranging his feathers and ruffling his crest.

He preaches, with most unconventional glee,
A sermon addressed to the squirrels and me,
Commending the wisdom of those that display
The brightest of colors when heavens are gay.

—SELECTED.

POPLAR TREES ARE HAPPIEST

Poplar trees are laughing trees,
With lilting silver call.
Willow trees droop weepingly
And never laugh at all.

Maple trees are gorgeous trees
In crimson silks and gold;
Pine trees are but sober trees,
Aloof and very old.

Black-oak trees walk sturdily,
And live oaks eager run;
The sycamores stand lazily
Beneath the summer sun.

But poplar trees are laughing trees
Wherever they may grow—
The poplar trees are happiest
Of all the trees I know.

HARRY NOYES PRATT.

The door is wide open for these two jolly girls. We are delighted to know that the teachers are doing their part so nobly in promoting the cause of conservation:

612 Everette St., Morgan City, La.

My friend Marks Amos and I are in the same class and would like very much to become members of your wonderful Club. Our teacher has recommended it to us. So please allow us to join.

We are only a pair of happy girls, willing to do our best at all times. Will you please send us application cards as soon as possible?

Yours very truly,
HELEN MAE WATSON.

Several students of the Andrew's School, Delhi, La., have written to us about joining our Club. We are very, very glad to have them join:

Delhi, La., Route No. 1.

Dear Editor:

We are sixth grade pupils of the Andrews School. We have organized a Nature Guardian Club. Will you please send us any information that would be of any use to our Club?

Yours very truly,
ANNIE L. MONTGOMERY,
CAROLL SHAW,
MURIEL HOLLOWAY.

FROM A HILLTOP

There is a wisdom in the love of earth;
There is a friendship in the valley's hand
Say what you will of books and their fine worth,
They have no value till we understand.

The tree's huge labor breaking through the soil,
The silence of this hill against the sky,
The plow that furrows and the seedling's toil,
The awful quiet in which oak trees die.

They have no value till we sense the surge
Of rivers put beneath a forest bed,
Of sun and wind and rain whose lives must urge
The flower's breath, the apple's green to red!

BERT COOKSLEY.

We regret very much that we have no literature on the wild flowers of our state to send to Miss Doggett. Perhaps the High School library or the Public Library will yield some information that will be of value:

Vivian, La.

Dear Editor:

I am very much interested in the flowers of Louisiana, and am kindly asking you to send me a booklet showing and containing the flowers of Louisiana.

Hoping that I may hear from you real soon,

Yours truly,
(Miss) EWELL DOGGETT.

S. L. I. Training School,
Lafayette, La.

Nature Guardian Editor,
Dept. of Conservation,
New Court Bldg.,
New Orleans, La.

Dear Editor:

We would like to get some information about joining the Louisiana Nature Guardians. We are a class of 35 pupils and we are in the 6B grade.

Please send us information as soon as possible because we are interested in becoming Guardians.

Yours truly,
The 6th B Grade,
In care of MISS STECKLER, *Teacher.*

The above letter was gladly received and the material was forwarded. We heartily thank Miss Steckler for her interest and cooperation.

CLOUDS

BILLIE JEAN F., 4B

When clouds in the air,
Go tumbling by,
They bump their little heads,
And then begin to cry.

Down come their little tears,
In great big drops of rain;
Dancing on the flowers,
And dashing on the pane.

Sometimes like flocks of birds,
Or white sheep on a hill,
The clouds go floating by;
But sometimes they are still.

Here is another teacher who is helping to protect our natural resources. We are deeply grateful to her:

Goldonna, La.,
March 25, 1933.

Nature Guardian Editor,
N. O. New Court Building,
New Orleans, La.

Dear Editor:

Enclosed are application cards for membership as Nature Guardians made out by fourth grade class of Goldonna High School. All badges and certificates may be sent in care of teacher, Marjorie Pennington.

We would also like to get the Conservation Review quarterly to keep in our library.

Sincerely,
(Signed) MARJORIE PENNINGTON.

We extend a hearty welcome to all of our new members, and hope they will become happy, useful, and faithful Guardians.

We shall be glad to hear from our members at any time, and shall be glad to print their poems, themes, and letters about any of the natural resources of Louisiana. We hope that our next issue will contain many interesting articles by members of our Club.

Address all letters to: NATURE GUARDIAN EDITOR, DEPARTMENT OF CONSERVATION, New Court Building, New Orleans, La.

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Keeping Death Rate Low in Louisiana

Functions of Principal Divisions of State Health Service in Disease Prevention and Collecting Vital Statistics

By DR. J. A. O'HARA,
President, Department of Health, State of Louisiana

THE organization of the Louisiana State Board of Health is based on the fundamentals of public health work and logically divides itself into divisions.

There are 13 principal bureaus under the Bureau of Administration. A brief resume of the more pertinent activities may give some idea of the magnitude of the Board's obligation and the effort to live up to them.

To gather correct returns of births and deaths is regarded by all civilized countries as one of the first essentials in effective health work. About 700 registrars send birth and death certificates from their respective localities to the State Bureau of Vital Statistics. Those that are incomplete are returned to the registrar with a letter of explanation. Transcripts are made of each certificate for the Bureau of the Census in Washington.

Louisiana was admitted into the registration area for deaths in 1918. Publication of the proportionately low death rate was a revelation to the commercial world. The figures carried conviction and led to the establishment of many forms of business which formerly had not considered Louisiana a favorable risk.

Prompt reports of cases of communicable diseases are essential to the control of possible outbreaks of diseases which may be a menace to the public health. While it has taken a number of years to build a system of reporting, it is gratifying that the feeling of responsibility for this information is growing.

• •

Compiled records of the more important diseases are published weekly. Our campaign to control malaria is State-wide and continuous, with the result that it is a vanishing disease; likewise typhoid fever, except in times of drought in limited foci, or other unusual conditions.

Protection of food is provided through the Food and Drug Division. Careful supervision is maintained over meats, fish, milk, fruits, vegetables, etc., and all places where foods are served or sold.

All State food and drug laws are enforced. Thousands of samples of milk and other food products are examined. A chemical laboratory, well equipped, is maintained in this connection.

The most recent major activity of the board is the eradication of tuberculosis among dairy cattle. This effort has been an objective since the Federal Government some years ago made an appropriation for the work, but owing to lack of funds the State was unable to do more than make a demonstration from year to year.

Since 1930, however, a program covering the entire State has been in effect. As a few cases of undulant fever have been reported, tests were included for B. abortus, with a few positive.

An adequate safe supply of drinking water used to be a problem in many sections of the State. Conditions, now, are entirely different. Supervision of the plants is maintained by the Bureau of Sanitary Engineering and effort is now being made to safeguard roadside supplies.

Other activities are: Supervision of public water supplies and supplies used by common carriers in interstate commerce; sewage and waste disposal; plumbing; swimming pools; rat-proofing; review of plans dealing with the above, and also of public buildings; jails; hospitals; schools, and the inspection of such buildings; investigation of complaints regarding ventilation, waste disposal, stream pollution, odor nuisances, plumbing, etc.; oyster sanitation; housing and sanitary surveys.

• •

There is a growing demand for laboratory service and it is the purpose of the board to serve the entire State. The central laboratory at New Orleans examines samples of water and milk supplies, also specimens for tuberculosis, typhoid, diphtheria, etc., animal heads for rabies, with regular routine work. There are five branch laboratories, located at Alexandria, Lake Charles, Monroe, Shreveport and Tallulah, which serve their respective districts.

The Bureau of Parish Health Administration supervises the 32 full time Parish Health Units which reach more than 60 per cent of the rural population of the State. Immunization against disease is stressed; thousands of anti-typhoid inoculations, smallpox vaccinations, and complete anti-diphtheria immunizations are administered yearly.

Constant improvement in sanitary conditions, particularly sanitary disposal of sewage, protection of water, food and milk supplies are a part of the program. Likewise, child hygiene, investigation of special diseases, and public health education receive a full share of attention.

Educational work in mental hygiene and child hygiene is carried on through lectures, letters, pamphlets and other publications, with such other activities in progress as funds will permit. The board furnishes free to physicians and midwives silver nitrate solution for use in the eyes of the newly born.

The Bureau of Information and Research is kept constantly busy sending out information in reply to requests.

• •

A well equipped division of printing and multigraphing is maintained for handling pamphlets, leaflets, circular letters and other communications sent out by the various bureaus. It is managed economically and more than pays the expense of operation.

It is realized that nothing can be more important to a State than its public health, but there is also the realization of how wide the gap is between what is achieved and what might be accomplished if the work were better understood. However, many agencies are cooperating for better health and sanitary conditions and the outlook is encouraging.

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BACK TO CONSERVATION

The federal government, particularly its interior department, is said to be returning to the conservation of "the Pinchot-Ballinger days."

It probably goes a little farther back than that. The general public has almost forgotten, and the younger generation of voters has never known, that the movement to conserve our natural resources in this rich country, according to the practice of older European countries, began under the first Roosevelt. Gifford Pinchot, now governor of Pennsylvania, was the first national forester. He interested Theodore Roosevelt in the pioneer field of forestry and reforestation, and the movement spread quickly and naturally to the preservation of other forms of natural wealth in danger of depletion.

After a period of apostolic enthusiasm for this gospel, interest waned somewhat. Control of exploitation of timber, oil, coal and mineral lands, irrigation, etc., became somewhat routine. Now there is a revival of interest, centering at present mainly in the Tennessee valley, but contemplating vast extensions if this important experiment succeeds.

Much depends on the current venture, which is now off to a pretty good start. The present tendency of greatly increased government control over business is more natural in this realm of national resources than in some others.

LARTO LAKE, AN OLD MISSISSIPPI

(Continued from Page 21)

nel now occupied by Black River. These levees overlie and obscure the immediate continuations of the Larto channel eastward.

Though the Mississippi River today shows a decided preference for the eastern side of its valley, it has not always done so. Larto Lake and a host of similar features tell us in unmistakable terms that in very recent times it has occupied channels at least more than half of the distance toward its western valley walls. Indeed the story of nearly all portions of the valley floor clearly impresses the fact that under natural conditions fixity in channel poistion is not the rule and that changes of unexpected proportions have taken place time and time again. It is impossible to interpret many of these as being more than a few hundred years old.

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*The writer is indebted to Dr. Henry V. Howe and Dr. Fred B. Kniffen for many valuable suggestions in connection with the problem presented in this paper and to Mr. U. B. Evans, of Alexandria, for making possible a memorable trip to Larto Lake (*and to Mr. Kinchen Floyd for his safe return*).

PLANTS AND ANIMALS

(Continued from Page 7)

agencies for regulating the rate of the life processes, but it is extremely difficult to determine whether the presence of pigment in any given case is the cause or effect of the changes.

That the chlorophylls are regulators of photosynthesis is indisputable but the simultaneous presence of the carotinoids in varying amounts presumably serves to modify the amount and character of the radiant energy absorbed as these pigments absorb a different part of the spectrum of light and hence produce a difference in the chemical activity or actinic effect of the absorbed energy in the plant tissues.

It appears that there is also some definite connection between pigment content and respiration of plants.

The gaseous exchanges involved in animal respiration, namely, oxygen into carbon dioxide, are accomplished through reversible changes of haemoglobin to oxyhaemoglobin, these being characteristic of blood pigments.

The easy change of carotene to xanthophyll and vice versa and the reversible changes of the yellow anthoxanthins to the red anthocyans under the influence of oxidizing and reducing enzymes which are universally present in plants, would suggest the possibility of the service of these pigments as carriers of oxygen for respiratory activities in plants in a way similar to that in which blood pigments serve in the animal body.

One of the functions of anthocyan, (it is presumed) is to act as absorbent for the heat rays of sunlight and so increase transpiration and other chemical changes.

In support of this view may be cited the general presence of such pigments in *arctic plants* and their appearance in leaves of many deciduous trees after frost in the fall.

The autumnal changes in foliage pigments may have the physiological function of absorbing heat in order to hasten the life processes of ripening and preparing for winter defoliation.

The rapid and brilliant changes in leaf colors after a sharp frost which kills the tissues and makes rapid translocation of food materials of the leaves to the storage reservoirs immediately necessary, have been explained as the response of the pigmentation of the leaves to the need for increased heat absorption, as the anthocyan pigments are known to be associated with sugar development, while chlorophyll is favorable to the production of starch.

The breeding of flowering plants having blossoms of almost any desired color has become a commercial enterprise of large importance.

The results which have been obtained in many cases have been made the object of scientific study of the genetics of color inheritance.

Recent experiments have demonstrated, also that colors are much more efficient than plant *odors* in attracting insects which visit the blossoms in search of nectar and in so doing promote the cross fertilization of plants.

We have still much to learn concerning the functions of the color constituents of plants. Perhaps, when more chemists become familiar with botanical science and more botanists become chemical minded, the rate of progress will be stimulated and our knowledge of the mysteries of plant metabolism greatly increased.

The life and soul of science is its practical application to our daily lives. Scientific investigations carried on with the *single motive* of acquiring new knowledge often leads unexpectedly to results of great practical value.

Such applications are however only incidental and in the world of science they provide no test of the importance of the work done.

Even if not a single practical result is reached by an investigation, the work is *worth doing* if it enlarges the store of knowledge or increases our outlook upon the universe.

RECEIVE VALUABLE LAND

(Continued from Page 37)

nies of nesting birds will fit well into the total pattern of the Department of Conservation's extensive program for wild life protection that is being constructively and vigilantly accomplished by the Division of Wild Life under the directorship of Mr. Armand Daspit and the Division of Enforcement under the directorship of Sheriff J. B. Dauenhauer, Jr.

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